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NEW YORK BOTANICAL GARDEN
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WITHDRAWN

c2. Flowers 5-merous, in sessile, quasi-catkins at the defoliated nodes. Perianth-leaves distinct to the ovary. Shrub with small, plane leaves. Fruit pea-like. 2. *Myoschilos.*

b2. Disk produced to interstaminal lobes. Axillary, sessile fascicles of 4–5-merous flowers. Shrub having rhomboid leaves with spinescent angles. 3. *Iodina.*

A2. Tube of the perigynous perianth more or less produced above the ovary, and not covered by the disk. Spikes terminal. Fruits nutlets.

b. Low herbs with linear or sublanceolate, rather rigid leaves. Flowers 4–5-merous. Bracts and bractlets not coalescing. 4. *Arjona.*

b2. Low herbs with linear leaves. Bracts and bractlets coalescing into a calyculus below the mostly 5-merous flowers. 5. *Quinchamalium.*

1. NANODEA Banks.

Low, moss-like; with alternate, narrow-linear *leaves*, concealing the perfect, subsessile *flowers*, which are mostly solitary. *Calyx* not produced above the ovary. *Disk* concave. Fruit a drupe.

Species 1, viz.:

N. MUSCOSA Gaertn. f.

Stem 6 cm. high. Upper *leaves* 8–16 mm. long. *Flowers* violet, 3 mm. long.

Magellan, in damp meadows; S. Fuegia (Dusén); Staaten I.; Falklands.

2. MYOSCHILOS Ruiz & Pav.

Branching, glabrous shrub, with small alternate, entire *leaves*, and catkin-like *spikes* at the leafless nodes of last year's branches. *Flowers* hermaphrodite, severally subtended by *bracts;* calyx-lobes 5, glabrous, their bases bearing 5 short *stamens* with small *anthers*. *Disk* broad; *style* 3-lobed. *Ovules* 3, pendulous. *Fruit* a drupe, sometimes with persisting bracts and calyx-lobes.

Species 1, viz.:

M. OBLONGUS Ruiz & Pav.

Leaves ovate, mucronulate, 12–25 mm. long, shortly petioled. *Spikes* 4–6 mm., ovoid, *flowers* purplish. *Calyx-lobes* transversely sulcate. *Drupe* purple, pea-like.

S. Patagon., upper valley of Rio Gallegos. (O. Nordenskjöld.) (Chili and Peru.) An infusion of its leaves is used for senna. "Codo-coypu"; food of the coypu rodent (*Myocastor coypus*).

MYOSCHILOS OBLONGUS ANGUSTUS (Phil.). *Leaves* narrow-linear. Patagonia (?).

3. IODINA. Hook. & Arn.

Tall, glabrous shrub, with alternate, rhombic, spinescent-angled, coriaceous *leaves*, and sessile, axillary *cymes* of 5-merous, puberulent *flowers*. *Calyx* with its free part broad-campanulate. *Style* conical, 3-cleft. *Ovules* pendulous on a central placenta. Globose *drupe*, separating into segments.

Species 1, viz.:

I. RHOMBIFOLIA Hook. & Arn.

(S. Brazil; Argentina); N. Patagon., in small groves at wide intervals over the dry ground. Fig. in Eng. & Prantl, iii, 1, p. 223. Called by the Spaniards "Sambretoro," a name also applied to *Maytenus;* by the Araucarians "Trallian."

4. ARJONA Cav.

Low herbs, often with tuberiferous rootlets, with alternate, linear or lanceolate, rigid, acute, glabrous *leaves*, often recurved; and pubescent *flowers* in a terminal *spike*, with bract and free bractlets. *Calyx-tube* continuing above the ovary; the 5 lobes recurved, spreading. *Stamens* included; anthers linear-oblong. Annular *disk* distinct from calyx. *Fruit* nut-like, enclosed in bracts and bractlets.

Species 9, in Chili and Patagon.

KEY TO THE SPECIES.

A. Leaves narrow-linear, 1-nerved, glabrous. Perianth silky outside. Racemes few-flowered.	
b. Leaves soft, green, apex mucronate. Perianth glabrous inside.	*ameghinoi.*
b2. Leaves flaccid. Perianth tufted inside.	*pusilla.*
A2. Leaves lanceolate, 3-nerved, woolly.	*adpressa.*
A3. Leaves long-linear, nervose, glabrous. Stem striate, apically naked and villous.	*longifolia.*
A4. Leaves linear-lanceolate, 5-nerved, largest upwards, amplexicaul.	*rigida.*
A5. Leaves ovate, 7-nerved, upwards lanceolate and 5-nerved.	
b. Leaves shorter, with rigid points, deficient downwards.	*patagonica.*
b2. Leaves longer, smooth or hairy, to woolly.	*tuberosa.*

1. A. AMEGHINOI Speg.

Soft, green, glabrous, perennial herb. *Leaves* alternate, narrow-linear, 1-nerved, apex minutely and acutely callose-mucronate. *Racemes* very depauperate, 1–5-flowered, relaxed. *Bracts* ovate-cochleate, green, gla-

brous, except the apex. *Perigonium* 5 times exceeding the bracts, outside appressed villous-silky, inside glabrous.

S. Patagon., in wet places by Rio Chico, at Chonk-aike.

2. ARJONA ADPRESSA Phil.

Densely arachnoid *woolly*. *Leaves* lanceolate, 3-nerved, the lower distant, subreflexed, the upper appressed, mostly imbricate. Flowers? *Tubercles* edible.

W. Patagon., along Rio Aysen, in rocky mountain meadows.

3. A. LONGIFOLIA Phil.

Stem sulcate-striate, its apex naked, villous. *Leaves* rigid, rather distant, long-linear, nervous, glabrous. *Perigonial* tube 12 mm. long, twice as long as the ovate, short bract.

(Mendoza); Chubut, in hills near Rio Carren-leofú.

4. A. PATAGONICA Homb. & Jacq. (*A. tuberosa* v. *patagonica* DC.)

Strict, erect, simply branching. Lowest *leaves* ovate, 7-nerved; the others lanceolate, 5-nerved; all with a rigid point. *Perianth* pilose inside, with pencils; lobes apically callous, glabrous inside. *Bracts* half shorter than the perianth-tube. Leaves shorter than in *A. tuberosa*, deficient downwards.

(Bahia Blanca); N. Patagon.; Punta Arenas; Fuegia; S. Patagon. (at Rio Coy, J. B. Hatcher, Dec. 30, 1896. "No tuberosity on roots." None should be expected at the date.). Spanish name "Macachina." Araucanian, "Sakel." "In winter one or more tubers are developed; these are eaten, raw or cooked. Southwards this is replaced by a different species with larger and thinner tubers." (Claraz per J. Ball.)

5. A. PUSILLA Hook. f.

Stem slender, erect, simple or divided. *Leaves* flaccid, generally recurved, long-linear, acuminate, the margins glabrous, 1-nerved. *Flowers* few, the outer bract large, cymbiform, obtuse, glabrate; the *calyx* externally silky, its throat enlarged between the stamens, with fascicles of jointed hairs. *Stigmas* 3, small.

S. Patagon., at Killik Aike, and Rio Coy (J. B. Hatcher, Dec. 13. "White to purplish.") Magellan, E., N. and S. Fuegia (Dusén); by Rio Chubut.

6. ARJONA RIGIDA Miers. (*A. tuberosa* Phil. non Cav.)

Low undershrub, 7 cm. high, with slender, striate, glabrous *stems* *Leaves* smaller and sparse below, larger and denser above, linear-lanceolate, canaliculate, amplexicaul, cuspidate-pungent, 5-nerved, margin cartilaginous, divaricate, glabrous. *Inflorescence* terminal, with a short silky peduncle, sessile flowers, and ovate-lanceolate, villous calycle. *Bracts* 2, laterally opposite, concealed by the calyculus, oblong, snowy-tomentose. *Perigonium* orange, retrorsely villous on outside. *Tube* slender; segments oblong, acute, glabrous inside. Filaments short; *anthers* included. *Ovary* 5-angular. *Style* filiform, 3-branched.

(Argentina to Mendoza); probably in N. Patagon.

7. A. TUBEROSA Cav.

Herb from a woody base, 12 cm. high; branches glabrescent. *Leaves* smooth or hairy, the lowest ovate-acute, 7-nerved; the others lanceolate, 5-nerved. *Bracts* and *bractlets* ovate-acute, hairy outside. *Perianth-tube* cylindrical, funnelform upwards, pilose or silky.

S. Patagon., Valley of Rio Gallegos (Nordenskj.); Magellan; Rio Sta. Cruz (Hatcher); Puerto Deseado; N. and E. Chili; Golfo de San Jorge (Mts. of Chili).

A. TUBEROSA LANATA n. var. (Plate XVI.)

"Apparently a woolly variety of *A. tuberosa* Cav., from which it differs very slightly in the flower." (Royal Gardens, Kew.)

By J. B. Hatcher in S. Patagon.

5. QUINCHAMALIUM Juss.

Low, glabrous herbs, with alternate, very narrow *leaves* and terminal *spikes* or heads of flowers, with a depressed, cup-like *calycle*, having a lacerate margin. *Calyx* globose, 4–5-costæ, ending in as many teeth, one of these slightly enlarged. *Corolla* tubular, its throat enlarged and bearing the slightly exserted, ovate-cordate *anthers*, which are opposite the acutely oblong, subrecurved corolla-lobes. *Style* filiform with 3 small *stigmas*. *Ovary* ovoid-globose, 1-celled, with 3 ovules. *Nut* 1-seeded within the persistent calyx.

Species 20, in the Andes; the expressed juice is used medicinally as a drink.

(J. Miers would place *Arjona*, *Myoschilos* and *Quinchamalium* in *Olacaceæ*, because they have a double perianth. Journ. Linn. Soc. Bot., xvii, p. 138.)

1. QUINCHAMALIUM CHILENSE Molina. "Quinchamali."

Annual, with stout fistular *stem*, 12 cm. high, the branches all reaching nearly the same height. *Leaves* diverging and curving upwards, linear-lanceolate, acute at both ends, margin subrevolute, 1-nerved on short petioles. Peduncle 4-angled. *Flowers* 5-merous, numerous in terminal globular *heads*.

(Chili); Patagon. Figs. G–P in Eng. & Prantl, iii, 1, p. 226.

Q. CHILENSE PROCUMBENS.

2. Q. GRACILE Brongn.

Very slender, with a flexuous, fibrilliferous *root*, and erect, slender *stems*, about 5–8 cm. high. *Leaves* linear, subfalcate, mucronate on a short petiole. *Head* of small, orange flowers. *Corolla* divided half way into 5 narrow segments. *Fruit* small, 5-costate, lemon-colored, in the calyx.

Patagon., by Rio Chubut; Lago Blanco; Rio Senger.

3. Q. MAJUS Brongn.

Stems erect, 25 cm. high, apically branching. *Leaves* linear, acute, 12–25 mm. long, sparse, the uppermost scabrous-margined. *Involucel* glabrous; flowers rather large; *perigonium* 15 mm. long, yellow-orange.

Q. MAJUS SPEGAZZINII (Speg. var. sine nomine).

Fructiferous *stems* thickening from the base gradually to the apex.

Patagon., by Rio Chubut.

4. Q. PATAGONICUM F. Phil.

Perennial. *Stems* ascending, striate, slender. *Leaves* fleshy, linear, apiculate. Segments of *perianth* two thirds as long as the 10 mm. tube. *Stamens* with very short filaments, and anthers one third or one half as long as the perianth-segments, slender. *Style* shorter than the anthers. *Fruit* inclosed in the subglobose, crustaceous, free, toothed involucre.

W. Patagon., in the Cordilleras. Stem 11 cm. long. Flowers 15–20 in a dense capitate spike. Larger leaves 12 by 1 mm. Like *Q. andinum*

Ph. and *Q. linarioides* Ph., but distinguished by its free crustaceous calyx enclosing the fruit.

Family 29. Olacaceæ.

Trees or shrubs with mostly alternate, simple, entire exstipulate *leaves*, and perfect, regular, 4–6-merous *flowers*, having a double *perianth*, the outer being small, cup-like, adnate to the hypogynous disk. Inner perianth-leaves distinct or united, and bearing 1–3 (mostly 2) times as many *stamens*. *Ovary* 1-celled, rarely partially 2–4-celled; the cells mostly with 1 pendulous *ovule*. *Fruit* a 1-seeded drupe or nut, with large *endosperm* and no testa.

Species 140, tropical. Two genera occur only in S. Amer. and W. Afr., one, *Heisteria*, with 20 sp. in S. Amer. and 1 sp. in Afr., the other *Ptychopetalum*, with 2 sp. in W. Afr. and 1 in Guiana and N. Brazil. It is uncertain whether the outer floral cup is a true calyx, or an involucre.

XIMENIA Plum.

Flowers 4-merous; inner *perianth* of 4 (rarely 5) linear, white leaves, hairy inside, apically revolute. *Stamens* 8–10. *Ovary* long-conical, 4-celled, 4-ovuled. *Drupe* ovoid, globular. Often with thorny branches.

Species 5, in S. Amer., Africa, Asia, and N. Caledon. Its hard wood is used as sandal-wood in the East Indies, and its fruit is eaten.

X. americana Linn.

Leaves oblong. *Peduncles* several-flowered, the lower often changed into spines.

(Guiana, Brazil, etc.) (Fig. in Eng. and Prantl, iii, 1, p. 237.) N. Patagon.

Family 30. Hydnoraceæ.

Succulent, parasitical herbs, with branching, *leafless* creeping *rhizoids*, which radiate from the insertion of the nutritive root, and produce here and there large *flowers* emerging from the ground. *Flowers* hermaphrodite, with single, 3–4-lobed, regular *perianth*, and inferior *ovary*. *Stamens* sessile within the tubes, isomerous and alternating, with many anthers having linear pollen sacs. *Ovary* 1-celled, with many parietal *placentæ*,

having many pendulous *seeds*. *Fruit* fleshy. *Embryo* globose, with *endosperm* and *perisperm*.

Species 8, Africa, and 3 species in extratropical S. Amer.

PROSOPANCHE DeBary.

Flowers on a leather-colored stalk, 3-merous, the 3 *stamens* surmounting 3 fleshy *staminodes* which are deeper in the tube. *Placentæ* plate-like, as 3 partitions of the ovary, enclosing the seeds.

Species 2.

1. P. BONACINAI Speg.

Tuber deeply delitescent, suborbicular or lenticular, branches solitary, long, hypogæous, 1-flowered. *Flowers* suberous-coriaceous, mostly 3-merous, with inferior, globose *ovary;* of the size of a hazel-nut, and with long, slender tube which equals or surpasses the thick apical lobes, themselves exceeding the long-ovate *staminal column*. Fruit subbaccate, small, slightly pulpy. Mostly the perianth-lobes are the only parts visible above the ground. The tubercle is buried several meters deep.

N. Patagon., by Rio Colorado, from the preandine region to the Atlantic, "Flor de tierra," parasitical on *Baccharis salicifolia*, *Gourliea decorticans* and on species of *Salicornia*. Its pulverized staminal column is used as hæmostatic, and its decoction as internal medicine.

2. P. BURMEISTERI DeBary.

(S. Amer., in pampas of Argentina, on roots of species of *Prosopis;* sometimes so common that pigs are driven to feed on the fruits.)

Family 31. POLYGONACEÆ. Buckwheat Family.

Herbs or shrubs, with jointed *stems*, and usually sheathing *stipules* (these obsolete in the *Eriogonum* section). *Flowers* small, regular, perfect or variously diclinous. Petals none. *Calyx* free, 2–6-parted, its segments sometimes petaloid. *Stamens* 2–9, hypogynous. *Ovary* 1-carpeled, 1-ovuled; *style* 2–3-cleft. *Achene* lenticular or 3-angled (or rarely 4-angled). *Embryo* orthotropous, in mealy endosperm.

Species 800, widely distributed.

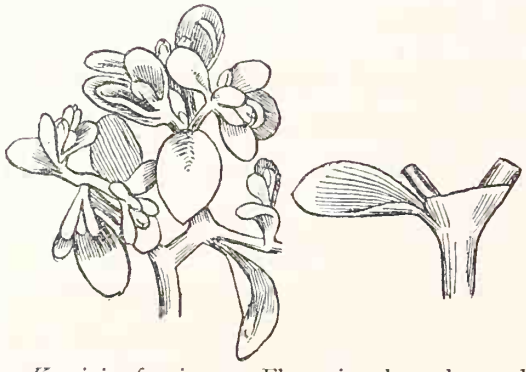
KEY TO THE GENERA.

A. Flowers cyclic, small. Endosperm not ruminate.
  b. Stipules none.
    c. Partial inflorescence without an involucre. Stamens 3. Bracts smooth, not accrescent. Dwarf annual. 1. *Kœnigia* (*Macounastrum*).
    c2. Flowers involucrate. Stamens 9. 2. *Eriogonum.*
  b2. Stipules ochreate. Flowers 3-merous. Perianth more or less coriaceous about the fruit, yet not close. 3. *Rumex.*
A2. Flowers acyclic; floral leaves mostly upright in fruit.
  b. Endosperm not ruminate. Embryo small, not folded. 4. *Polygonum.*
  b2. Endosperm ruminate. Flowers hermaphrodite or polygamous. Perianth dry about the fruit, wingless. Climbers. 5. *Antigonum.*
  b3. Endosperm ruminate. Subdiœcious, twining plants. Perianth fleshy about the fruit, 5-partite. 6. *Muehlenbeckia.*

1. KŒNIGIA Linn. *Macounastrum* Small.

Dwarf, glabrous annuals, fleshy, subsessile. *Leaves* small, oval, entire, whorled at the top, differing below. *Flowers* few in the axils, crowded among the upper leaves, minute, articulated on the pedicels; each subtended by a bract, which is adnate to and shorter than its pedicel. *Perianth* deeply 3 (2–4)-cleft; *stamens* 3 (1–4), short. Nut trigonal or compressed. The name *Kœnigia* L., though dating from 1767, is rejected by Small, because of *Konig* of Adans, 1763. This may be justified by the confusion caused by several other applications of the same name, subsequent to 1767, as *Konigia*, *Koniga*, and *Kœniga;* but *Kœnigia* is not identical with *Konig* and has priority over the others.

FIG. 62.



Kœnigia fuegiana. Flowering branch; and (on right) stipular sheath (after Dusén).

Species 2, one (*K. islandica* L.) in arctic regions, extending to the Himalaya; the other in Fuegia. Fig. in Brit. & Br. i, 542.

K. FUEGIANA Dusén.

Intricately branching, sordid-green. Root fibrous, producing several, short, dichotomizing stems. Leaves fleshy, subsessile, alternate, crowding upwards, obtuse. Stipules connate, forming ample, short sheaths. Flowers in 3's or more, the apical small, yellow-green, with small,

scarious bracts. Perianth 3-parted, its lobes erect, obtuse, oval or longer. Anthers 3. Stigmas 2, sessile, nearly globose. Seeds trigonal (Fig. 62).

S. Fuegia, by Rio Azopardo. (Dusén.) Lower and more densely branching than *K. islandica*.

2. ERIOGONUM Michx.

Stemless or leafy-stemmed herbs without ochreæ. *Flowers* small, in cymes, umbels or heads, subtended by *involucres*. *Calyx* 6-cleft or 6-partite. *Stamens* 9. *Style* 3-parted; *stigma* capitate. *Achene* 3-angled.

Species 160, chiefly in the Western United States.

E. AMEGHINOI Speg.

Curvembryum. Low, leafy annual; the *radical leaves* orbiculate, basally rounded or subcordate, long-petioled; the *cauline* elliptical or obovate, basally cuneate, short-petioled; when young somewhat villous, afterwards glabrate. *Peduncles* numerous, at first scapiform, afterwards 5–6-times dichotomizing, pubescent. *Involucre* sessile, campanulate, 5-lobed. *Perigonium* more or less pediceled, exsert; the segments narrow, acutish, pubescent, yellowish inside.

S. Patagon., in dry places between S. Julian and Rio Deseado, and near Lago Colu-huapi. Differs from *E. rotundifolium* Benth., by the sessile involucres, and narrower perigonial segments.

3. RUMEX Linn. Sorrel.

Stems leafy, grooved, with cylindrical sheathing *stipules* and paniculate flowers. *Calyx*, 2-seriate, each series 3-leaved; the inner 3 becoming wings in *fruit*, one or all having a basal tubercle. Stamens 6, short. *Style* 3-parted; *stigmas* tufted. *Achenes* trigonal.

Species 130, widespread in nontropical regions. Several in Chili and Argentina. Few in Brazil, Austral., or N. Zeal., 1 in Tristan; some in S. Afr.

KEY TO THE SPECIES.

A. Dicœcious or polygamous; leaves more or less hastate (except *b*3.)

b. Basal leaves stalked, upper sessile. Fruiting calyx enlarged. *acetosa*.

*b*2. Leaves all stalked. Fruiting calyx not enlarged. Rootstalk creeping. *acetosella*.

*b*3. Leaves rosulate, wavy, lanceolate. Stems short. *hippiatricus*.

A2. Hermaphrodite; leaves not hastate.
b. Fruiting calyx entire. Leaves usually petiolate.
c. Leaves narrow-spatulate, basi-attenuate. Outer fruiting sepals with large callus. *crisparia.*
c2. Leaves oblong-lanceolate, basi-cordate, wavy. Fruiting sepals broad. *crispus.*
c3. Leaves obovate to cuneate-oblong. Fruiting sepals elliptical. Racemes terminal leafless. *cuneifolius.*
c4. Leaves oblong-linear, acuminate, runcinate. *magellanicus* (Camp.).
c5. Leaves lanceolate, attenuate upwards, rounded at base. *magellanicus* (Gris.).
b2. Fruiting calyx toothed or lacerate.
c. Leaves narrow-lanceolate. Pedicels slender. Long, setaceous teeth from fruiting calyx. *maritimus.*
c2. Lower leaves cordate-oblong, upper narrow.
d. Fruiting sepals cordate, unequally enlarged. Inflorescence leafless. *pratensis.*
d2. Fruiting sepals large and veiny. Uppermost leaves linear. *pulcher.*
b3. Prostrate from thick taproot. Radical leaves narrow-linear. *decumbens.*

1. RUMEX ACETOSA Linn.

Stem 30–90 cm. tall. *Basal leaves* few, long-petiolate; *upper leaves* subsessile, 3–12 cm. long, oblong-hastate. *Sepals* in fruit oblong-cordate.

(Eurasia and temperate N. Amer. Fig. in Brit. & Br. i, p. 548.)

Falklands (introduced).

2. R. ACETOSELLA Linn. Sheep-sorrel.

Glabrous, annual or perennial herbs, with slender, erect stem, creeping *rootstock*, and dicœcious flowers. *Leaves* narrow, hastate, 3–10 cm. long, obtuse or acute, petioled, the auricle entire or toothed; or upper leaves without auricle. *Sheath* silvery, soon lacerate. *Sepals* 1 mm., achene 2 mm. long. Foliage often of reddish hue.

(Eurasia, and through temperate and warm parts of N. Amer. Fig. in Brit. & Br. i, p. 547.)

Falklands. Punta Arenas (J. B. Hatcher). "This and the *R. acetosa* L., included in Gaudichaud's list, I consider undoubtedly as introduced plants, of which the seeds, being eaten by the birds, are by their agency transported to otherwise inaccessible cliffs." (J. D. Hooker.)

3. R. CRISPISSIMUS O. Ktze.

Low, *glabrous*, blackish herb, with ascending stems, to 10 cm. high. *Leaves* narrow-spatulate, obtuse, attenuate to a long petiole (blade over 3

cm. long, petiole the same). *Flowers* glomerulate, supported by long leaves. *Fruit* 1–1.5 mm. long, 3 outer calyx-segments small, erect, oblong, 3 inner ovate-acuminate, entire, all with large globose callus, not cordate. *Nut* triquetrous, fuscous.

Patagon., 50–53 lat., by Rio Sta. Cruz.

4. Rumex crispus Linn.

Tall. *Leaves* long, to 25 cm., crisped and wavy-edged, with long petioles; oblong or oblong-lanceolate, basi-cordate, with long petiole; the upper narrower. *Panicle* lax, *pedicels* exceeding the calyx.

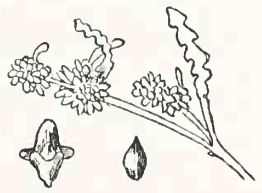
(Eurasia; nat. in N. Am.); Punta Arenas; through nearly all Patagonia; Falklands, introduced. *R. crispus sanguineus*, N. Patagon. S. Patagon., by RR. Sta. Cruz and Chico.

5. R. cuneifolius Campd.

Ascending, 30–60 cm. *Leaves* petiolate, obovate or cuneate-oblong, obtuse, undulate-crenulate or plane. *Raceme* terminal, leafless. *Verticils* dense, the lower rather remote. *Calyx* exceeding the thickish pedicels. *Callus* on sepals, thick.

S. Brazil and Chili; Chonos Archip.; near Carmen de Patagones.

Fig. 63.



Rumex decumbens. — Branch with leaves and inflorescence; magnified fruit and achene. (After Dusén.)

6. R. decumbens Dusén.

Prostrate, glabrous perennial, from thick tap-root, sending up several stems which are terete, mostly with *leaves* only at the verticils; also numerous long-petioled, narrow-linear, very crisp *radical leaves*. Floral *verticils* 1-leaved; the lower remote, the upper crowded. *Flowers* perfect; *perianth* segments oblong, the inner apically rounded, with *callus* below. Achenes acutely trigonal, brown, shining (Fig. 63).

S. Patagon., near Rio Coyle (Nordenskj.); N. and E. Fuegia, "in nearly all the lagunes of E. Fuegia" (Dusén).

7. R. hippiatricus Remy.

Glabrous. Rhizome thick, tortuose, with scaly top. Stems short, subsimple. *Leaves* nearly all radical, rosulate, nearly as long as the stems,

lanceolate-acute, crisp-undulate. *Flowers* diœcious, in a terminal panicle. Perianth-segments oval, obtuse, entire.

(Mendoza); Patagon., in mountain swamps near Rio Carren-leofú.

8. RUMEX MAGELLANICUS Campd. (*Monogr. Rum.* 114). (Sp. dub.)

Leaves oblong-linear, runcinate, crest-margined. *Stipules* 25 mm. *Flowers* crowded, upper leafless.

Magellan.

9. R. MAGELLANICUS Griseb. (1854).

Leaves petiolate, lanceolate, wavy-crisp, attenuate-acute, rather rounded at base. Floral *verticils* many-flowered, contiguous. *Calyx-wings* of fruit elliptic, entire, faintly venous, all calliferous. "Inflorescence rich purple-red." Indian name Calcatreo.

Magellan, by Rio Sta. Cruz; valleys of N. Patagon., N. and E. Fuegia. Falklands.

10. R. MARITIMUS Linn.

Leaves narrow-lanceolate. Floral *verticils* much crowded, leafy. *Pedicels* slender, exceeding the *sepals*, which are narrow, 2–4-toothed, calliferous.

(Europe); N. Patagon., S. Patagon., near RR. Sta. Cruz and Chico.

R. MARITIMUS FUEGINUS (Phil). (*R. fueginus* Phil.)

Leaves linear, basi-truncate, rather obtuse. All the inner *perianth* segments calliferous (in Dusén's specimens; Phil. secus.).

S. Patagon.; E. Fuegia, "in almost all freshwater lagunes." (Dusén.)

11. R. PRATENSIS Mert. & Koch. (*R. acutus* L.)

Lower leaves oblong-cordate, acute, waved, *upper* lanceolate. *Sepals* in fruit broad triangular-ovate, entire at apex, toothed below.

N. Patagon., by Rio Negro. "Perhaps introduced." (J. Ball.)

12. R. PULCHER Linn.

To 90 cm. tall. *Branches* divaricate, rigid. *Leaves* below cordate-oblong to panduriform; above, lanceolate; uppermost linear. *Floral verticils* remote, leafless at top. *Calyx* exceeding pedicels. *Fruit-sepals* ovate-oblong, veiny, strongly toothed on margins, unequally calliferous.

(Old World, and nat. in U. S.); Magellan (Dusén); near Carmen de Patagones.

4. POLYGONUM Linn.

Flowers perfect, in terminal or axillary clusters. *Calyx* 4–5-parted, outer segments the larger. *Style* 2–3-parted, the *stigmas* capitate. *Achenes* invested by or exceeding the calyx.

Species 200, cosmopolitan save in the tropics; several in Chili, few in Brazil and Argentina.

Key to the Species.

A. Leaves lance-linear to oblong. Sheaths lacerate. Axillary flower-clusters.	*camporum.*
A2. Leaves lanceolate, acuminate both ways, style 2-parted.	*ferrugineum.*
A3. Leaves oblong-linear.	
b. Sheaths silvery, 2-parted. Flowers small, in axillary clusters.	*aviculare.*
b2. Sheaths at length lacerate. Flowers in 3's, peduncled.	*chilense.*
A4. Leaves elliptical to obovate.	
b. Sheaths bifid at first. Branches prostrate. Flowers fascicled.	*delfini.*
b2. Sheaths large, bifid or lacerate. Flowers none–3, axillary, pediceled.	*maritimum.*
A5. Leaves ovate-sagittate, the upper narrower, long-petioled. Stem twining.	*convolvulus.*

1. P. AVICULARE Linn.

Slender, glabrous, prostrate herbs, with oblong-linear, or oblanceolate, acute, subsessile *leaves*, jointed to the silvery, 2-parted sheaths. *Flowers* small, 1–5 in axillary clusters. *Calyx* 5-parted, green, bordered white or pink.

(Eurasia and N. Amer., a weed in cultivated lands); N. Patagon.; Magellan. (Dusén.)

2. P. CAMPORUM Meisner.

Glabrous, tall, slender-branched annual or perennial. *Leaves* sessile, linear-lanceolate to oblong, obtuse, 6–25 mm., deciduous with the lacerate sheaths. *Flowers* several, in axillary clusters, short-pediceled. *Stamens* 8. *Achene* trigonal, shining-black.

(N. Amer. in prairies, extending to S. Amer.); S. Patagon., by Rio Sta. Cruz.

P. CAMPORUM AUSTRALE Meis.

Upper *leaves* subulate-linear, revolute-margined. *Calyx* less than 2 mm. long.

(Argentina.); mouth of Rio Chubut. (Dusén.)

3. Polygonum chilense C. Koch.

Glabrous. *Leaves* oblong-linear, sessile, thickish, nearly parallel-nerved. *Sheaths* with oblong, nerved lobes, at length lacerate, about half as long as the leaf. *Flowers* campanulate, in 3's, rather long-peduncled. *Nutlets* shining, smooth.

(Chili); W. Patagon.; S. Patagon.; RR. Gallegos and Sta. Cruz; Magellan.

4. P. convolvulus Linn.

Glabrous, scurfy, annual, with twining *stem*, mostly branching. *Leaves* ovate-sagittate, the upper narrower, long-petioled, acuminate, subciliate. Axillary floral clusters lax. *Flowers* greenish, on slender pedicels. Calyx 5-parted. Stamens 8. *Style* subentire with 3 *stigmas*. *Achene* trigonal, obovoid-pyramidal, black, not shining.

(Old World, naturalized in N. Amer.); in cultivated lands near Carmen de Patagones.

5. P. delfini Phil. (*Avicularia.*)

Stem 20 cm. high. Branches herbaceous, prostrate. *Leaves* elliptical, concave, glabrous, pinnate-nerved, the lateral nerves obscure. *Sheaths* bifid, becoming lacerous. *Flowers* axillary, fascicled. *Achenes* long, smooth, trigonal at apex.

Valley of Rio Palena.

6. Polygonum ferrugineum Weddell. (*P. spectabile* Mart.)

Perennial, subglabrous, scurfy. Erect, 60–90 cm.; fleshy base, sparingly branched, with short internodes. *Leaves* lanceolate, 5–17 cm. long, acuminate both ways, with short hairs on midrib and short petiole. *Sheaths* cylindric, ciliate when young. Panicle subsimple, ending in linear, spicate racemes. *Calyx* pink, nerved; stamens 6–7, included. *Style* 2-parted to near its base. *Achene* lenticular, orbicular, biconvex, nearly black, shining.

(W. Indies and E. Brazil.)

P. ferrugineum patagonicum Speg.

Lower than the type, 15–20 cm. high. Primary cauline *leaves* when young hoary-puberulous on the under surface, then becoming glabrous

like the others. *Sheaths* enlarged at the mouth, very thin without bristles. *Pedicels* subglabrous, obsoletely glandulous. *Achene* pale-fuscous, not shining.

Patagonia, near Cabo Raso, and Lago Colu-huapi.

7. POLYGONUM MARITIMUM Linn. Seaside Knotweed.

Root deep. Stem 20–50 cm. long, prostrate or ascending, branched, deeply striated. *Leaves* ovate to oblong, fleshy, about as long as the internodes, 6–24 mm. *Sheaths* large, 2-parted or lacerate above. *Flowers* 1–3 in the axils, slender-pediceled.

(Eur. and U. S., by the sea; also S. Afr.) S. Chili to Magellan.

N. and E. Fuegia. (Dusén.)

5. ANTIGONON Endl.

Climbing herbs from a woody base, the stem and branches ending in tendrils. *Leaves* alternate, usually cordate, with *ochreæ* small or mere lines. *Perianth* 5–6-partite, red, the outer 3 segments large, cordate, accrescent in fruit about the trigonal *achene*. *Stamens* about 8, on an annulus with intermediate teeth. *Styles* 3 with capitate stigmas. *Endosperm* ruminate.

Species 3–4, Mexico and southwards. (Cult. in gardens.)

A. LEPTOPUS Hook. & Arn.

Leaves ovate-cordate, acuminate, mostly tomentose underneath. *Rachis* of raceme ending in 3-hooked *tendrils*.

(Fig. in Eng. & Prantl, iii, 1*a*, p. 31, fig. 14.)

S. Chili; probably in N. Patagon.

6. MUEHLENBECKIA Meis.

Undershrubs like *Rumex*, often *twining*, with stalked, alternate leaves; *sheaths* small, or leafless; and *small*, polygamo-dicœcious *flowers* in axillary or terminal fascicles. *Perianth* 5-cleft, fleshy, persistent. *Stamens* 8. *Styles* 3, with dilated stigmas. *Nut* trigonal, included, or apically exsert.

Species 15, Australia, N. Zeal., Pacific Is. and Extra-trop. S. Amer. (*M. platyclada* Meis., of Solomon's I., has flat phyllodes with very few leaves.)

1. MUEHLENBECKIA CHILENSIS Meis.

Branches twining, angulate. *Leaves* triangular to hastate-cordate, ovate or narrower, entire, without side-nerves. *Fascicles* racemed. *Achenes* globose, triangular upwards.

N. Patagon.; Valley of Limay; also in Chili; "called Sarsaparilla, and used medicinally." (J. Ball.)

2. M. ROTUNDATA PHIL.

Suffruticose? Branches short, erect. *Leaves* veinless, ovate, apically rounded, basicordate, rarely truncate. *Flowers* axillary, very shortly pediceled (not racemed), also a terminal leafless *spike*. *Achene*, included, subglobose, dull.

(Araucania); Chubut, in shrubberies near Lago Nahuel-huapi, and by Rio Carren-leofú. Branches about 18 cm. long.

Family 32. CHENOPODIACEÆ. Goosefoot Family.

Mostly herbs, with exstipulate, often lobed, or thickish, or fleshy leaves, and perfect or diclinous, apetalous flowers, with small greenish, 2–5-lobed calyx, and with or without bracts. Stamens equal and opposite to the calyx-lobes, filaments rarely united; anthers 2-celled. Ovary superior, 1-celled; styles 1–3. Ovule 1. Utricle indehiscent, rarely circumscissile, often enclosed in the persisting perianth. Embryo ring-like or spiral in mealy endosperm.

Species 550, widely distributed.

KEY TO THE GENERA.

A. Embryo ring-shaped or horse-shoe-shaped. (*Cyclolobeæ.*)

b. Roots and seeds normal. Hermaphrodites; stamens 2–5, basiconnate. Leaves opposite, linear. Bracts exceeding the perianth. 1. *Nitrophila*, p. 355.

b2. Roots, and mostly also the stem abnormal.

c. Fruit becoming indurated below, dehiscing by a lid. Hermaphrodite, with cymose flowers. Stamens 5, proterandrous, basiconnate on a fleshy ring. Root fleshy. Seed horizontal. 2. *Beta*, p. 356.

c2. Fruit normally indehiscent.

d. Flowers glomerulate, rarely spicate. Leaves mostly alternate, often hastate, and often with glandular hairs.

e. Flowers hermaphrodite, proterogynous, bractless. Perianth coriaceous, divided at least halfway.

f. Perianth-leaves 3–5, mostly unchanged in fruit. Stamens 5, or fewer, free or basi-connate. 3. *Chenopodium*, p. 356.

*f*2. Perianth urn-shaped, 3–5-toothed. Leaves pinnatifid. 4. *Roubieva*, p. 361.

*f*3. Perianth-leaf 1. Stamen 1, with a flat filament. Annual herb. 5. *Monolepis*, p. 362.

*e*2. Flowers mostly unisexual; the males bractless, with large perianth; the females without perianth, but with large bracts halfway connate about the fruit. Stamens 1–5, connate below. Leaves often with glandular hairs becoming scales. 6. *Atriplex*, p. 362.

*d*2. Flowers in club-shaped or conical inflorescences, or minute in the hollows of seemingly leafless stems; hermaphrodite, proterandrous. Perianth herbaceous or membranaceous, connate. Stamens 1–2. Leaves reduced, often united with the segments of the succulent, jointed branches.

e. Leaves subtending the flowers alternate, spirally placed.

f. Perianth above dorsally compressed, 4-angular, without wing-like borders. Perianth-leaves united with each other and with the bract. Small herbs with the lower leaves opposite, the upper alternate. 7. *Halopeplis*, p. 366.

*f*2. Perianth above extending on all sides, but without wing-like borders; its leaves free. Shrubs seemingly leafless, the segments broadening distally. 8. *Spirostachys*, p. 367.

*f*3. Perianth with wing-like borders. 9. *Heterostachys*, p. 368.

*e*2. Leaves that subtend the flowers opposite, connate, persisting; the flowers being like joints in the cavity. Embryo conduplicate; with scarcely any endosperm. 10. *Salicornia*, p. 368.

*A*2. Embryo planospiral (*Spirolobeæ*). Endosperm none or little.

b. Perianth hypogynous; its leaves not connate. Stamens 5. Leaves succulent, linear-subulate. 11. *Lerchea* (*Sueda*), p. 370.

*b*2. Perianth of female flowers none. Leaves linear-spatulate. 12. *Halophytum*, p. 371.

1. NITROPHILA S. Wats. (DC. sub *Banalia*.)

Small, succulent, dichotomously branching herb; with solitary, sometimes 3-glomerulate, flowers in the axils of the opposite leaves. Perianth-leaves pergamentaceous, ovate, obtuse, 1-nerved, the inner smaller. Stamens 5, with 4-celled anthers. Style long, stigma enlarged, papillose only on its inside. Fruit conical. Seed lenticular, shining black.

Only species.

N. OCCIDENTALIS S. Wats.

The Argentine and Patagonian forms do not branch dichotomously and have smaller leaves than the N. American. (Speg.)

(W. N. Amer., Argentina); Patagon., by Golfo de San Jorge; Rio Sta. Cruz. (Speg.)

2. BETA Linn. Beet.

As *Chenopodium*, except that each flower has 3 small bracts at its base, and that the ovary and seed are immersed in the succulent base of the perianth.

B. VULGARIS Linn.

Stem herbaceous, to 50 cm. high, with angled branches. Leaves acute or subobtuse, subsinuate or entire, undulate, glabrous, clear green or purplish; the lower ovate-oblong, with decurrent petioles; the upper subsessile, oblong. Spikes long, narrow, erect, in a bract-bearing panicle. Glomerules with 2–4 flowers, sessile, pale green, mostly digynous; fruiting calyces, 2–3-coalescent; their segments at length costate-carinate, apically inflexed.

Biennial (Mediterr. region, and widely cultivated); not rare near Carmen de Patagones (introduced).

3. CHENOPODIUM Linn. Goosefoot.

Leaves alternate, entire, or toothed, or lobed. Flowers bractless, minute, in compound spikes. Calyx green to fleshy, wingless in fruit. Stamens 1–5. Styles 2–3. Embryo annular.

Species 60, widely distributed.

KEY TO THE SPECIES.

A. Perianth herbaceous in fruit, nearly closed. Embryo annular. No glandular hairs (but saccular hairs). (Sec. *Chenopodiastrum.*)

b. Leaves usually sinuate-dentate, basi-cuneate. Stem erect, sulcate, fruiting calyx keeled and closed. *album.*

b2. Leaves entire.

c. Stem slender, terete. Fruiting calyx keeled, not closed. *fuegianum.*

c2. Stem branching, striate. Fruiting calyx closed, not keeled. *vulvarium.*

A2. Perianth enclosing the fruit. Flowers glomerate, spicate. Embryo curved but not completely annular. Style-base with glandular hairs. (Sec. *Ambrina.*)

b. Leaves subpetiolate, oblong, etc. *ambrosioides.*

A3. Perianth persisting after fall of fruit. Flowers in loose subterminal dichasia. Glandular hairs on ovary, not on leaves or perianth. (Sec. *Botrydium.*)

b. Stem sulcate. Leaves subpinnatifid. Fruiting calyx not closed nor keeled. *botrys.*

A4. Flowers glomerular. Perianth herbaceous on the fruit. Embryo incompletely annular. (Sec. *Pseudoblitum.*)

b. Leaves oblong to lanceolate. Plants succulent. Seeds minute, rugose. *glaucum.*

b2. Leaves more or less deltoid-ovate.

c. Glomerules sessile and with a terminal spike. Seeds pitted. Stem prostrate. *antarcticum.*

*c*2. Racemes densely flowered, leafless. Stem stout, fleshy. Seeds large, reticulate. *macrospermum.*

*c*3. Glomerules simple or compound or spicate. Stem angular. Fruiting calyx incompletely closed. Seeds margined and pitted. *rubrum.*

*A*5. Low or depauperate.

b. Leaves ovoid to trapezoid. Glomerules short. Seeds rounded. *patagonicum.*

*b*2. Leaves minute, fleshy, 7 mm. long. *carnosulum.*

*b*3. Leaves several-toothed on each side, mealy. Plant erect. *hircinum.*

*A*6. Perianth enclosing the fruit, afterwards stellately spreading. Leaves small, hastate, 3-lobed *scabricaule.*

*A*7. Perianth spreading in fruit. Leaves green, 3-nerved, 3-lobed. *ameghinoi.*

*A*8. Perianth closed in fruit. Annuals.

b. Paniculate.

c. Leaves deltoid, the lower hastate, 3-lobed. *ficifolium.*

*c*2. Leaves rhombic-ovate, at length purplish, the lower auricled. *purpurascens.*

*b*2. Subcorymbose. Leaves ovate-rhombic, sharply-toothed, glabrous. *murale.*

1. CHENOPODIUM ALBUM Moq.

Polymorphous, white to greenish. *Stem* herbaceous, erect, sulcate-striate, subramose. *Leaves* petiolate, ascending, rhombic-ovate, basi-cuneate, obtuse or acute, sinuate-dentate, sometimes subentire, slender, puberulent; the upper oblong, lance-linear, entire. *Racemes* paniculate, subspicate, dense or lax, nearly leafless. *Fruiting calyx* closed, carinate. *Seed* acute-margined, shining.

(Europe and N. Africa; Asia; Mex. and Cuba; Argentina); Patagon.

2. C. AMBROSIOIDES Linn. (Spachm. sub *Ambrina.*)

Pubescence glandular-aromatic, not farinose. *Stem* herbaceous, erect, sulcate, branching. *Leaves* subpetiolate, oblong, attenuate basewards, acutish, sinuate-dentate or subentire, puberulous, glandular-green underneath; the uppermost lance-linear, entire. *Racemes* glomerate-spicate, dense-flowered, leafy. *Fruiting calyx* closed, without a carina, with curious glands. *Seeds* obtuse, margined, shining.

(Fig. in Eng. & Prantl, iii, 1*a*, p. 58, K–Q.) (Cosmopolitan); in W. Patagon. and N. Patagon.

3. C. AMEGHINOI Speg.

(*Botryois*, odontophyllum.) Erect, fastigiately branching annual. *Stem* herbaceous, striate, glabrous. *Leaves* with slender, long petioles, ascend-

ing, green, not or very obscurely farinose, 3-nerved, subrhombic-lanceolate, 3-lobed; lobes all acute, lateral, small, cuneate downwards. *Racemes* leafless, divaricately cymose, dichotomous. *Fruiting calyx* subpatent; *sepals* acute, and very acutely carinate. *Utricle* rather large, subglobose. *Seed* horizontal, pallid-ferruginous, rather large, globose to sublenticular, with the margin broadly truncate, rostellate, not or scarcely shining, obsoletely and laxly subpapillose.

S. Patagon., in dry places near Rio Chico about Emelk-aike. Seed as in *C. purpurascens* Jacq.

4. CHENOPODIUM ANTARCTICUM Benth. & Hook. (Hook. f. sub *Blitum*.)

Stem prostrate-ascending, papillose. Leaves petiolate, deltoid-ovate, rather obtuse, sinuate-toothed. Glomerules sessile, compound, axillary and in a leafy terminal spike. Sepals 3, green, at length changing, exceeding the utricle, linear-spatulate, externally papulate. Seed vertical, orbicular, pitted, with obtuse margin.

S. Patagon., by Rio Sta. Cruz. (Hatcher; "Fruiting perianth scarcely papulate, short.") Staaten I. E. Fuegia. (Dusén.)

5. C. BOTRYS Linn.

Annual herb, with erect stem and sulcate, angulate branches. Leaves long-petioled, ascending, oblong, obtuse, subpinnatifid-sinuate, with obtuse lobules, glaucous-green, glandular hairy on both surfaces; upper leaves spatulate-lanceolate, subentire; uppermost as narrow bracts. Racemes divaricate, cymose, leafless. Fruiting calyx not closed nor keeled. Seed marginally obtuse, fine-channeled, smooth.

(Eurasia; naturalized in N. Amer.); Magellan, once at Elizabeth I.; these with lower leaves hastate-triangular, as if a depauperate *C. chilensis* Schrad.

6. C. CARNOSULUM DC.

Stem slender, erect, striate, branching. Leaves petiolate, minute (6–8 mm. long, the petiole included), rhombic, entire, subcarnose, furfuraceous-punctulate, pale green. Flowers minute, in short, dense, leafy racemes. Fruiting calyx subcarinate, incompletely closed.

Fuegia, Gregory Bay. (R. O. Cunningham.)

7. CHENOPODIUM FICIFOLIUM Smith.

Annual. *Stem* herbaceous, erect, striate, branching. *Leaves* with slender and long petioles, ascending, deltoid, basi-cuneate, obtuse or acutish, sinuate, subdentate, thin, farinose, glaucous-green, paler underneath; the inferior leaves hastate-subtrilobate, dentate, the upper subrhombic-oblong, the uppermost linear-lanceolate, entire. *Racemes* paniculate, rather lax, and nearly leafless. *Fruiting calyx* completely closed, acutely carinate. *Seed* with an obtuse margin, excavate-punctulate, slightly shining.

(Europe); S. Patagon., near Rio Chico and Rio Sta. Cruz. "Leaves whitish-farinose, especially underneath. Seeds lenticular, black, shining, margin sometimes obtuse, sometimes acute, smooth or obsoletely subpunctulate, 1–1.15 mm. diam." (Speg.)

8. C. FUEGIANUM Speg.

(*Chenopodiastrum.*) Entire-leaved, farinose, odorless, small. Stem mostly procumbent, slender, terete. Leaves petioled, minute, rhomboid, obtuse, coarsely membranous. Flowers glomerulate, axillary. Calyx in fruit with the keel not closed. Seed midsized, obtuse-margined, shining.

Chubut; S. Patagon., by Rio Sta. Cruz; Fuegia, Punta Anegada in Elizabeth I., on maritime dunes.

9. C. GLAUCUM Linn.

Succulent annual, much branched. Leaves slender-petioled, oblong to lanceolate, subsessile upwards, mealy underneath, the lower sinuate-toothed. Flowers in small, axillary clusters, or panicled above. Seed minute, rugose.

(Eur., nat. in N. Amer.)

C. GLAUCUM DIVARICATUM Hook. f.

Prostrate, with slender divaricate branches.

Chonos Archip., not northwards in the Andes. N. Patagon.

10. C. HIRCINUM Schrad. (*C. bonariense* Tenore.)

A depauperate, simple, erect form, with leaves coarsely 5–7-toothed on each side. Young leaves farinose on the two surfaces, at length glabrous on the upper surface.

S. Patagon., by R. Chico de Sta. Cruz; in fields by Lago Colu-huapi. Plant varying greatly by leaves, mealy to green, perigon not very carinate, seed black, in a thin utricle, more or less adherent. (Speg.)

11. CHENOPODIUM MACROSPERMUM Hook. f.

Glabrous, not glaucescent; stems stout, rather succulent, divaricately branching below. Leaves petioled, fleshy, deltoid-oblong, obtuse. Racemes compound, densely flowered, leafless, bracted. Seeds large, erect, reticulate.

Falklands; used as a potherb. S. Patagon., by R. Sta. Cruz.

12. C. MURALE Linn.

Annual. *Stem* herbaceous, ascending, sulcate-angulate, branching. *Leaves* petiolate, ascending, ovate-rhombic, acute, unequally and acutely toothed, thin, shining, green on both surfaces. *Racemes* divaricate-cymose, subcorymbose, rather lax and nearly leafless. *Fruiting calyx* usually closed, subcarinate. *Seed* with an acute margin, punctate-rugose, opaque.

(Old World); N. Patagon., common by the wayside near Carmen.

13. C. PATAGONICUM Phil.

Low, branching from the base, green. *Leaves* petioled, ovate or oblong-triangular, subtruncate at base, or trapezoid, entire, or with a tooth at the base on each side; upper leaves simpler. *Floral glomerules* shorter than the petioles. *Seed* rounded dorsally, opaque.

Valley of Rio Palena, in W. Patagon.

14. C. PURPURASCENS Jacq.

Annual, with herbaceous, erect, angular, branching *stem*. Leaves with slender, long petioles, spreading, rhomb-ovate, obtuse, mucronulate, thin, subpulverulent, obscurely green, at length purplish; lower leaves auriculate, sinuate-dentate; upper ones lanceolate, entire. *Racemes* paniculate, compact, leafless. *Fruiting calyx* completely closed, carinate-costulate. *Seed* with an obtuse margin, smooth, not shining (whitish).

(Asia; S. America); not rare by the waysides near Carmen de Patagones. Seed lenticular to subglobose, with small rostellum.

15. CHENOPODIUM RUBRUM Linn. (Reichb. sub *Blitum*).

Stem angular, branching. Leaves alternate, petioled, deltoid or deltoid-ovate, cuneate, obtuse, sinuate to dentate, thickish, shining, glaucous-green to reddish. Glomerules simple or compound, the upper spiked. Fruiting calyx incompletely closed, herbaceous or pitted. *Seed* obtuse, margined, pitted.

(Eurasia; Azores; also cult.); through Patagon., E. Fuegia. (Dusén.)

16. C. SCABRICAULE Speg.

(*Chenopodiastrum.*) Annual, low or minute, somewhat smooth-seeded, at first somewhat papulose-farinose, afterwards glabrate, green, rather erect; *branches* pallid-green, terete to angular, more or less callous-papillose, laxly or divaricately branching. *Leaves* small, membranaceous or thickish, conspicuously hastate-trilobed, all the lobes elongate, acute. *Flowers* in racemes. *Calyx-segments* green, slender, obtuse, retuse, not carinate, at first enclosing the fruit, afterwards more or less stellate-patent. *Seeds* lenticular, acutely carinate-margined, very finely reticulate, black and shining.

Rather rare along Rio Chubut, and Rio Chico (also in Mendoza Andes).

Has different forms viz.:

(*a*) *pusillum*, 20–50 mm. high; leaves cruciately and acutely 3-lobed, fruiting calyx small. By Rio Chubut.

(*b*) *megalospermum*, 10–15 cm. high; leaves obtusely hastate-subtrilobed, fruiting calyx rather broad. By Rio Sta. Cruz.

(*c*) *robustum*, stout, 15–20 cm. high; leaves thickish, acutely hastate, trilobate, fruiting calyx mediocre.

17. C. VULVARIUM Linn.

Annual. Stem 30 cm. high, branching, striate. *Leaves* alternate, petioled, rhombic-ovate, 3 cm. long, entire, pulverulent-hoary. *Racemes* leafless, dense, spike-like. *Fruiting calyx* closed, without keel. *Seed* acutely margined, finely pitted, shining. *Odor* offensive.

(Eur. and N. Afr.); E. Fuegia. (Dusén.)

4. ROUBIEVA Moq. Tand.

Flowers mostly hermaphrodite, bractless. *Calyx* urceolate, 5-cleft, the lobes not appendaged, at length coalescing, as a pentagonal capsule.

Stamens 5; filaments thick. *Style* short, *stigmas* 3. *Utricle* compressed. *Seed* lenticular, erect; endosperm abundant; *embryo annular.*

A South American herb, near *Blitum.*

ROUBIEVA MULTIFIDA Moq. (Fig. in Brit. & Br. i, p. 576.)

Leaves pinnatifid, the segments lanceolate or linear, nerves prominent beneath. Penetrating *scent.*

Brazil to N. Patagon., near Carmen.

5. MONOLEPIS Schrad.

Branching annuals, with alternate, entire or lobed *leaves*, and minute, bractless *flowers*, in small axillary clusters, or solitary. *Flowers* with usually only 1 sepal, persisting by the flat utricle. *Stamen* 1. *Styles* 2. *Pericarp* adhering to seed. *Embryo* annular.

Species 3, N. E. Asia, and N. W. Amer., one passing to S. Amer.

M. CHENOPODIOIDES Moq. (*M. nuttalliana* R. & S. in Brit. & Br. i, 577.)

Stem 30 cm. Leaves trifid, hastate, acuminate, smaller upwards. Glomerules leafy. Seeds granulate.

(N. W. Can., to Calif. and southwards.) Patagon., by mouth of Rio Chubut (Dusén); by Carmen de Patagones; by Rio Deseado.

The Patagonian specimens are mostly small, glabrous, dull-green. (Speg.)

6. ATRIPLEX Linn.

Herbs or shrubs, with small, green, diœcious or monœcious *flowers* in axillary glomerules or panicled spikes. *Male flowers* bractless, *calyx* 3–5-parted, *stamens* as many. *Female flowers* without calyx, but with 2 bracts, which enlarge in fruit and partially unite. *Ovary* ovoid to globose; *stigmas* 2. *Embryo* annular.

Species 120, chiefly subtrop. and temperate.

KEY TO THE SPECIES.

A. Leaves more or less oblong.

b. Leaves minute, sessile, mealy underneath, acutish. Prostrate, much branching. *montevidensis.*

b2. Leaves subpetiolate, lepidote, obtuse. Erect, branching. *lampa.*

*b*3. Leaves petiolate, mealy, obtuse. Fruiting bracts round-cordate, 2-crested. *patagonica.*
*b*4. Leaves emarginate, wavy. Fruiting bracts rhomboid, tubercled. *undulata.*
*A*2. Monœcious. Leaves not oblong, except *b*2.
b. Leaves spatulate, subsessile. Tall shrubs, lepidote; male spikes above axillary glomerules. *pamparum.*
*b*2. Leaves oblong-elliptical, short-petioled. Prostrate, branching, grayish. Bracts deltoid, connate. *reichii.*
*b*3. Leaves ovate to hastate, subentire, sessile upwards; silvery. Flowers spicate-racemose. *ameghinoi.*
*b*4. Leaves hastate-deltoid to triangular-oblong, narrower upwards, green. Bracts veiny. *hortensis.*
*b*5. Leaves small, rhombic-ovate, entire, mealy; petioles twice as long. Glomerules axillary. *frigida.*
*A*3. Dicœcious.
b. Leaves linear-elliptical, cuneate-petiolate, whitish. Fruiting bract triangular-ovate, smooth. *vulgatissima.*
*b*2. Leaves small, or suborbicular to elliptical, crowded, sessile or nearly so. Female glomerules with protruding styles. Bracts 2-crested. *macrostyla.*
*b*3. Leaves sessile, sagittate with long auricles. Bracts 3-nerved, not crested. *sagittifolia.*

1. ATRIPLEX AMEGHINOI Speg.

(*Obione.*) Monœcious, annual? Tall, all silvery-cinereous; *leaves* rather large, membranaceous, densely and minutely subpellucid-punctate, ovate or hastate, entire or obsoletely repand-subdentate, obtuse, subtriplinerved; the lower more or less long-petiolate; the upper sessile. *Flowers* long- and interruptedly subspicate-racemose. *Thecæ* of bracts cuneate-ovate or obtriangular, subtruncate, marginally 3–5-dentate, the upper submembranaceous and subsessile, the lower coarsely suberose in the disc, and largely 2-crested at the sides, all connate nearly to the apex.

Not rare in dry salines near Rio Chubut, and along Rio Chico. An erect herb, 25–60 cm. tall.

2. A. FRIGIDA Speg.

Monœcious, annual herb, all densely farinose-hoary. *Stems* a span high with stellately spreading, lax, alternate branches; the branchlets also prostrate. *Leaves* alternate, rather small, broadly ovate or rhomb-ovate, densely hoary-farinose on both surfaces, acute or obtuse, at base rotundate- or cuneate-subtruncate, entire, membranaceous, with petioles twice their length. *Flowers* glomerulate; glomerules all axillary, subglobose, half as long as the subtending leaf; *male flowers* minute with yellow exsert

anthers; bracts of *female flowers* hoary, obovate, membranaceous, united to the apex, their upper margin subtruncate, obsoletely 3-dentate; disk slender, smooth. *Seed* not seen.

Dry stony places between San Julian and Rio Deseado. Root vertical, 10–15 cm. long.

3. ATRIPLEX HORTENSIS Linn.

Monœcious; the radicle inferior, sublateral. *Stem* erect, angulate, branching. *Leaves* alternate, petiolate, ascending, hastate-deltoid, to triangular-oblong, green both surfaces; upper leaves ovate-lanceolate, obtuse, mucronulate. *Bracts* ovate or round-ovate, not appendaged, reticulately venous.

(Asia and cult.); escaped in Chubut.

4. A. LAMPA Gill. (*A. ceratophylla* O. Ktze.)

Stem fruticose, erect, subangulate, substriate, branching much, the branches unarmed. *Leaves* alternate, subpetiolate, divaricate, oblong-attenuate downwards, obtuse, deeply sinuate-dentate, thickish, subcoriaceous, crispate-revolute, lepidote-hoary. *Theca* of the bracts very shortly stalked, ovate-rhomboid or subcordate, obtuse, the margin sinuate-denticulate, not appendaged by a disc, obsoletely reticulate nerved.

(Near Mendoza); by Rio Chubut, and Lago Nahuel-huapi. "Radicle of the cyclic embryo superior. *Atriplex lampa* O. Ktze., non Gill, is a widely different species." (Speg.)

5. A. MACROSTYLA Speg.

(*Obione.*) *Diœcious* perennial, all lepidote argenteous, low, with woody caudex, densely many-branched at its crown; the branches slender, terete, erect or prostrate, simple or sparsely subbranching, leafy. *Leaves* crowded or lax, alternate or subopposite, small, thickish but flaccid, occasionally suborbicular or elliptical, obtuse, entire, very shortly petiolate or sessile. *Flowers* densely congested in apical or axillary glomerules; the *males* comparatively large, ferruginous-lepidote; the *females* canescent-woolly, with very large exsert styles. Theca of bracts obdeltoid, hoary below, rounded-truncate and obsoletely tridentate above; long time bearing the exsert styles; at first compressed on the smooth disc, afterwards inflated, and more or less callous and 2-crested.

"Not rare in sandy salines by Rio Chico and Rio Deseado. Allied to, if not identical with, *A. reichei* Dusén." (Speg.)

6. ATRIPLEX MONTEVIDENSIS Spreng.

Suffruticose, perennial, prostrate-effuse, densely branching. *Leaves* alternate, sessile, minute, linear-oblong, acutish, entire, farinose underneath. *Bracts* connate above the middle. Apex of radicle and cotyledons superior.

(S. Brazil; Montevideo); N. Patagon., near Carmen; Golfo de San Jorge.

7. A. PAMPARUM Griseb. (*A. lorentzii* O. Ktze.)

(*Obione.*) Branching, lepidote-hoary, shrub nearly 2 meters high. *Leaves* sparse, spatulate, entire or repand, subsessile. *Flowers* monœcious. *Male* flowers uppermost, most of them in a leafless, interrupted spike. *Female* glomerules axillary, their *bracts* subsessile, cuneate, subrotund, united half-way, above unequally sinuate and toothed. *Teeth* obtuse, 2-crested dorsally.

(Chili); N. Patagon.

8. A. PATAGONICA Dietr.

Ascending, branching shrub. *Leaves* petiolate, oblong, basi-attenuate, obtuse, sinuate-toothed; thickish, coriaceous, farinose-hoary. Fruiting *bracts* orbiculate-cordate, entire, broadly 2-crested on back.

Patagonia.

9. A. REICHII Volkens.

Monœcious. Prostrate shrub, with gray, scrobiculate indumentum. Root thick; *stems* many, simple and naked below, branching and leafy above. *Leaves* short-petiolate, oblong-elliptical, obtuse, entire, larger above. *Male* flowers crowded at apex of branches, and in axillary glomerules; *female flowers* terminal and axillary, most of them in a short spike. Bracts deltoid, basiconnate.

E. Fuegia, above tide mark by the seaside. (Dusén.)

10. A. SAGITTIFOLIA Speg.

Diœcious shrub, over 1 meter high, intricately branching, unarmed, hoary. Leaves alternate, sessile, sagittate, entire; their auricles long, often involute into the axil, with white, cinerascent indumentum. Theca of bracts short-peduncled, orbicular to ovate, rounded below; above more or less 3-lobed; also dorsally plane, obsoletely 3-nerved, not crested.

Patagon., by R. Sta. Cruz; Chubut, near Rawson, etc.

11. ATRIPLEX UNDULATA Dietr.

Branching shrub. *Leaves* short-petioled, coriaceous, oblong, obtuse, emarginate, basi-attenuate, entire, wavy-crisped. *Fruiting bracts* minute, rhomboid, obtuse; their margin subsinuate; their back coarsely tubercled.

(Argentina); Patagonia.

12. A. VULGATISSIMA Speg.

Diœcious shrub, branching, unarmed. *Leaves* alternate, linear-elliptical, mostly obtuse, cuneate-petiolate; plane, thickish, membranaceous, white with a close indumentum. *Theca* of bracts sessile, mediocre, triangular-obovate, cuneate downwards, apically rounded to 3-toothed, dorsally smooth.

Patagon., by R. Sta. Cruz, and Golfo de San Jorge; at Puerto Madryn. (Dusén.)

7. HALOPEPLIS Bunge.

Small herbs, mostly with knotted branches, and rounded, fleshy *leaves*, opposite below, alternate above and embracing the stem. Oblong *strobiles* of perfect *flowers*, the *perianth* 4-angled, but 3-toothed; in groups of 3, with spirally arranged *bracts*, which are united to each other, and to the walls of their receptacle. *Stamens* 1–2, subsessile. Ovary pyriform, stigmas 2. Utricle obovoid, compressed. Seed subreniform.

Species 4, Mediterr. to Central Asia; and the following:

H. GILLESII Griseb.

Branches slender, not jointed. *Leaves* cordate-rotundate, concavo-convex, knot-like, imbricate in three rows along the ultimate branches. *Calyx* 3-cleft. (Cetera desunt.)

(Argentina); N. Patagon.

H. PATAGONICA (Moq. Tand. sub *Halostachys*).

Stem suffruticose, ascending, inarticulate, branches herbaceous, alternate, spreading-ascending. *Leaves* alternate, semiamplexicaul, appressed, ovate, obtuse. *Catkins* alternate, shortly peduncled, cylindraceous, obtuse.

Bahia Blanca; near Rio Negro; Peninsula Valdes.

8. SPIROSTACHYS S. Watson.

Glabrous shrubs, sometimes apparently *leafless*, erect, branching, fleshy; the branches mostly jointed, bilaterally broadening. *Strobiles* of perfect flowers, alternate, cylindraceous, with spirally arranged *bracts*, having 3–5 flowers in the axils. *Calyx* angulate upwards, 4–5-lobed or crenate. *Stamens* 1–2, exsert. *Ovary* lagenæform, compressed; *stigmas* 2. *Utricle* ovoid. *Seed* obovoid. (Fig. in Eng. & Prantl, iii, 1*a*, p. 77, M–O.)

Species 5, 1 in N. W. Amer.; others in extratrop. S. Amer.

1. S. OLIVASCENS Speg.

All obscurely green during life; fuscous olivascent *in sicco*. Branches slender, the old cinereous, the young whitish. *Leaves* small, fleshy, obscurely green, broadly ovate, sessile, semiamplexicaul. *Floral spikes* all conspicuously alternate, fuscous-green, sessile, short, elliptical or subglobose. *Perigonium* subtrifid, the lateral lobes acute, carinate-winged. *Stamens* paired; ovary glabrous; *seed* sublenticular; *rostellum* very small, glabrous, but minutely papillose-warty. *Embryo* terete-hippocrepiform; radicle inferior, subparallel with the cotyledons.

Common in salines by Rio Negro near Carmen.

2. S. PATAGONICA (Moq.) Benth. (O. Ktze. makes this *Allenrolfea*.)

Stem not jointed. *Leaves* alternate, semiamplexicaul, appressed, ovate-obtuse; fleshy, not 3 mm. long. Strobiles thick-cylindric. *Bracts* like the leaves, 3-flowered. *Seed* obovate-oblong.

(Argentina); N. Patagon., Chubut.

(*S. patagonica* is *Halopeplis patagonica* Moq.-Tand.)

3. S. RITTERIANA (Moquin-Tandon sub *Halostachys*).

Stem fruticose, erect, inarticulate, branches alternate, erect-appressed. *Leaves* alternate, semiamplexicaul, very appressed, cordate-ovate, rather obtuse, scale-formed. *Catkins* alternate, finely pedunculate, short, ovate-oblong, at length cylindrical, obtuse.

(Hispaniola, Mendoza); Patagon., Peninsula Valdes, Chubut, and near Rio Negro. Determination uncertain. A glaucous whitish shrub, the leaves caducous except from the young branches. Bracts like the leaves, but broader.

4. SPIROSTACHYS VAGINATA Griseb. (O. Ktze. places this under *Allenrolfea*.)

Cortex brown. Cauline *leaves* reduced to the sheath, and covering the whole internode, giving the appearance of a jointed branch; leaves when young obliquely truncate. Strobiles cylindric. *Bracts* 5-flowered, peltate. *Seed* obovate.

(In saline desert at Santiago di Estero, Argentina; N. Patagon.) (?).

9. HETEROSTACHYS Ung.-Sternb.

Much branching, fleshy, erect shrub, the branches subopposite, strict, and jointed. *Leaves* opposite, but distinct, densely imbricated, suborbiculate, obtuse. *Strobiles* with caducous scales, "certainly opposite" (spirally arranged, we think, B. & H.), the lower pediceled, the upper sessile, turgid. *Bracts* many-seriate, broader than long, free. *Flowers* concealed in the axils of the scales; *perianth* orbicular, compressed, broad-winged.

Only species:

E. RITTERIANA (Moq.) Ung.-Sternb.

(Argentina; Hispaniola); Patagon., Chubut, San José Peninsula.

10. SALICORNIA Linn.

Fleshy, glabrous, with opposite, terete *branches*, the *leaves* being reduced to opposite scales, forming cup-like sheaths at the nodes. *Flowers* sunken, 3–5 together in the upper axils, forming terminal spikes. *Stamens* 2 (1), exserted. *Stigmas* 2. *Utricle* enclosed by the spongy fruiting calyx.

Species 10, widely distributed in saline soil. Its ash is valuable as a supply of soda, and is called "Jume": giving by analysis 60 per cent. of soda salts (carbonate, chloride, and silicate), 19 per cent. of potash salts (phosphate and carbonate); also sulphate of lime, and magnesium carbonate.

1. S. BERGII Ltz. & Nied.

Erect shrub, with decussate branches, the *joints* 12 mm. long, terete and rigid, their sheaths very small, 2-lobed; the shorter branches, 40 mm. long, ending in thickish, cylindrical spikes; *spikes* 20 mm. long, narrowing upwards, obtuse. Flowers in 3's. *Calyx-lobes* 3. *Seed* brown, minute, ovoid.

N. Patagon., Rio Negro opposite Choele-choel.

2. SALICORNIA CORTICOSA (Walp., var. *nachtigalii.*)

Undershrub, 25–30 cm. high, many-stemmed, from a subterranean rhizome; *joints* 3 cm. long, with deep sheath. *Branches* erect, 6–10-jointed below the spike; the number decreasing upwards. Terminal spike with 4–6 pairs of slender lateral spikes starting below it. *Flowers* in 3's. *Seed* obovate, with small hairs.

Saline swamps through all Patagonia.

3. S. DOERINGII Ltz. & Nied.

Erect or procumbent undershrubs, with thick, rigid decussate *branches*, the joints 5–12 mm. long, their apex thick, ending in a low sheath. Spikes peduncled, small, slightly attenuate upwards, obtuse. Flowers in 3's. Fruiting calyx 3-toothed, with obscure wing. Seeds brown, minute, oval, with small recurved hairs.

N. Patagon., Neuquen; S. Patagon., in salinas by Rio Sta. Cruz; N. and E. Fuegia, near tidemark. (Dusén.)

4. S. FRUTICOSA Linn. (Forsk. sub *Suæda.*)

Stem fruticose, erect, 1 meter high or more, with many erect, leafy branches. *Flowers* in small axillary clusters, in 3's, or solitary. Calyx unchanged in fruit. *Seeds* shining, subrostellate.

(Eur. & N. Afr.) Patagon., in saline marshes of Rio Colorado, by Rio Sta. Cruz. N. Fuegia, at Catharine Point. (R. O. Cunningham.)

(Brit. & Br. i, 583, suggest that *S. ambigua* Mx. of E. U. S. may be identical with *S. fruticosa.*)

S. FRUTICOSA PERUVIANA.

Bolivia.

5. S. GAUDICHAUDIANA Moq.

Stem fruticose, erect; its branches subherbaceous, ascending, joints short, slightly thickened at the apex, their *sheaths* emarginate-bifid, with acutish lobes. *Spikes* subsessile, slender, scarcely attenuate, obtuse, winged. *Calyx* subtetragonal.

(Brazil); N. Patagon., Rio Negro.

6. SALICORNIA MAGELLANICA Phil.

Herbaceous, prostrate, rooting. *Joints* of the branches moderately long, thick towards the apex; their *sheaths* 2-lobed. *Spikes* sessile, thick, short, ovate.

Magellan.

11. LERCHEA Hall (1751, non Linn.). (*Dondia* Adans, 1763; *Suæda* Forsk., 1775.)

Saline herbs or shrubs, with alternate, narrowly linear or subterete, fleshy leaves; and axillary, bracteolate, very small flowers, solitary or clustered in the axils. Calyx 5-parted, thickish, in fruit keeled and enclosing the ovoid utricle. Stamens 5, short. Styles mostly 2. Embryo plano-spiral.

Species 50, on seashores and saline steppes. Rich in soda.

1. L. DIVARICATA (Moq.-Tand. sub *Suæda*) O. Ktze.

Stem fruticose, procumbent, branching, the branches very divaricate, obsoletely puberulous. Leaves semiterete, basally attenuate, acutish, rigid, scarcely puberulous. Flowers axillary, sessile, solitary, hermaphrodite. Fruiting calyx when dry subglobose. Seed with an obtuse margin, smooth, rather shining. Perennial shrub, 2–6 meters high; wood hard.

(S. Amer.); N. Patagon.; Chubut.

2. L. FRUTICOSA (L.) O. Ktze. (*L. maritima* v. *fruticosa*.)

L. FRUTICOSA BRACHYPHYLLA Speg.

Stems short, robust, subtrigonal, angulate, with slender, short branches. Leaves fleshy, thick, ovate, terete. Flowers in 1's or 3's, sessile at the axils. Seeds subglobose, shining black, 2–3 mm. diameter.

S. Patagon., by Rio Chico.

L. FRUTICOSA MEGALOSPERMA Speg.

Robust, erect, fastigiately branching; branchlets appressed, terete, densely leafy. Leaves elliptic-linear, semiterete; flowers 1–3 in the axils; sessile. Seeds vertical in the closed, fleshy perigonium, 4 by 3 mm., shining black.

S. Patagon., on Isla de Los Leones, at mouth of Rio Sta. Cruz.

3. LERCHEA MARITIMA (L.) O. Ktze.

Stem herbaceous, diffuse branching, the branches erect or prostrate, glabrous. Leaves long, plane on upper face, convex on under surface, basally dilating, often acutish, subflexuous, fleshy, glabrous, upper leaves shorter. Flowers axillary, sessile, 2–3-glomerate; fruiting calyx inflated, carinate, greenish. Seed rostellate, with acute margin, distinctly punctulate-rugose, shining. Annual.

(Old World); N. Patagon., in saline swamps near Rio Negro.

4. L. PATAGONICA Speg. (sub *Suæda*).

Glabrous, annual herb, prostrate-effuse, sparingly branching, with remote nodes. Leaves alternate, linear, acutish, flowers sessile in the axils, solitary or sparsely glomerate.

S. Patagon., in inundated maritime sands at Isla de Los Leones, in estuary of Rio Sta. Cruz.

12. HALOPHYTUM Spegazzini (Nova Addenda ad Floram Patagonicam, p. 152, Bonaria, 1902).

Char. Chenopodiacea, chenopodiea, cyclolobea, salicorniea, endocladantha.

Flowers unisexual, crowded in acrogenous or pleurogynous, unisexual strobili, at the axes of the bracts concealed in hollows of the rachis. *Perianth of male* flowers membranaceous, 4-leaved, the leaves linear, spathulate, free from the base, subimbricate, the lateral pair external, the median pair internal; *filaments* very slender, subulate; *anthers* linear, versatile, 2-locular, extrorse; no staminodes or rudiment of ovary. *Perianth of female* flowers none; *ovary* immersed in excavations of the axis, closely applied but not adnate; *style* subulate filiform, acutish, exsert, scarcely papillose; ovary 1-locular and 1-ovulate, the ovule on a short, basal, axile funicle. *Fruit* nut-like, on the subglobosely thickened, woody rachis of the strobili, which is mostly denuded of bracts; pericarp membranaceous; endocarp osseous; mesocarp hirsute-spongy; fruit becoming polystichously plurilocular, and the locules unequal by pressure, 1-seeded. *Seed* typically lenticular-reniform, minutely rostellate, the testa fuscous, adnate to the locular walls; *embryo* annular, terete, surrounding the pulverulent-amylaceous endosperm, apex of radicle and of cotyledons superior.

A monœcious shrub, glabrous, annual (?), *fleshy* and decumbent, the branches falsely *trichotomous*, not jointed; the *leaves* sessile, semiterete, fleshy, obtuse, the *spikes* or unisexual strobili solitary on the ends of the branches or laxly and few-gregariously sessile.

Allied to *Pachycornia* Hook. f., but very distinct.

HALOPHYTUM AMEGHINOI Speg. (*Tetragonia ameghinoi* Speg. in Nov. Add. ad Fl. Patag., n. 147).

Glabrous, mediocre annual with opposite or alternate, divaricate *branches*. *Leaves* sessile, linear, obtuse. *Flowers* solitary, sessile, or rarely stalked in the upper axils. *Sepals* 4, cruciate. *Ovary* obovate. Drupe 1–5-celled.

S. Patagon., by Rio Chico de la Sta. Cruz, and by Lago Viedma.

In sandy marshes in South Patagonia and Chubut.

The *female spikes* simulate densely leafy branchlets in bud.

Family 33. AMARANTACEÆ. Amaranth Family.

Herbs or (tropical) shrubs, with simple, thin *leaves*, and small, green or white, apetalous *flowers*, perfect or diclinous, *scarious-bracted* and *2-bracteolate*, often in spikes or heads. *Calyx-segments* 1–5. *Stamens* 1–5, hypogynous; anthers 1–2-celled; filaments mostly united below. *Ovary* 1-celled. *Stigmas* 1–3. *Ovules* 1, rarely more. *Fruit* mostly a circumscissile utricle or irregularly dehiscing, or indehiscent. *Embryo* annular. *Endosperm* large.

Species 425, most in warm countries.

Allied to *Chenopodiaceæ*, but differing by—

(*a*) Bracts scarious, not leafy.
(*b*) Habit less fleshy, and leaves thin.
(*c*) Frequent union of filaments.
(*d*) Sometimes by 1-celled anthers.
(*e*) Sometimes by plurality of seeds.
(*f*) Utricle not closely connected with the persisting perianth.
(*g*) Utricle being commonly circumscissile.

KEY TO THE GENERA.

A. Anthers 2-celled. Ovule erect. Leaves alternate.
b. Perianth-segments erect in anthesis. Flowers polygamo-dioœcious. Stamens 2–5. Utricle indehiscent or circumscissile. 1. *Amarantus.*

b2. Monœcious. Perianth none. Stamens 2. 2. *Amarantellus.*

A2. Anthers 1-celled. Flowers hermaphrodite. Ovule suspended from top of funicle. Perianth-leaves free. Leaves opposite.

b. Stigma sessile, capitate. Perianth sessile amid bracteoles, pilose. Staminal tube 5-cleft, the antheriferous segments linear-ciliolate. 3. *Pfaffia.*

b2. Stigmas 2, subulate, or 2–3-branched. Perianth silky, its 5 segments free or basi-connate. Staminal tube long, 5-lobed, the lobes broad or fringed or trifid. 4. *Gomphrena.*

1. AMARANTUS Linn.

Annual herbs, with alternate, petiolate, pinnately veined *leaves*, and diclinous flowers in spikes or axillary glomerules. *Sepals* 2–5. *Stamens* 2–5, anthers 2-celled. *Styles* 2–3. *Fruit* circumscissile or indehiscent. Ovule 1, subsessile, erect.

Species 50, widely distributed.

1. A. BLITUM Linn. (*Euxolus viridis* Moq.)

Stem stout, branching, reddish. *Leaves* ovate, and various, obtuse to emarginate. *Flowers* in axillary spikelets, shorter than the petioles, with an erect, long, terminal spike. *Sepals* 3, lanceolate. *Seed* lenticular.

Old World; Brazil; N. Patagon., Rio Negro.

2. A. CRISTULATUS Speg.

Subcinereous-green, annual, 10–30 cm. high. *Stems* rosulate-effuse, numerous, pallid, striatulous. *Leaves* small, crowded, alternate, their limbs ovate or lanceolate, rather firm, obtuse, mostly complicate and densely wavy-crisped on the margin; petiole nearly as long. *Glomerules* all axillary, subglobose densely crowded. *Flowers* minute, very crowded; *sepals* 5, spatulate, obtuse, scarcely mucronulate. *Utricles* ovate, compressed, included, acutish, minutely 3-mucronulate.

N. Patagon., in dry sandy places between Rio Negro and Rio Colorado.

3. A. HYBRIDUS Linn. (*A. chlorostachys* W.)

Slender, dark-green to purple. *Flowers* chiefly in linear, terminal spikes. *Sepals* 5, cuspidate; *bracts* twice as long. *Seed* orbicular.

(Eurasia and Amer., N. and S.); Bahia Blanca and N. Patagon. "The young plant is eaten like spinach." (J. Ball.)

4. AMARANTUS VULGATISSIMUS Speg.

Stem procumbent, pale green, striatulous, glabrous. *Leaves* long-petiolate, ovate or lanceolate, obtuse or very obtuse, mucronulate, rigidly membranaceous, greenish to subcinerascent. *Glomerules* axillary, shorter than or equalling the petiole, the apical crowded in a simple or scarcely compound *raceme*, which is more or less elongate, erect and thick. *Flowers* small; *sepals* 5; spathulate, very obtuse, but mucronulate. *Utricle* sublenticular, smooth, enclosed in, or scarcely exceeding the perianth.

N. Patagon., not rare in cultivated places near Carmen de Patagones.

2. AMARANTELLUS Speg. (Plantæ novæ nonnullæ Amer. Austral., p. 343, 1901.)

Flowers monœcious, 1-bracted and 2-bracteolate. *Perianth* none. *Stamens* 2, oppositibracteolate; *anthers* short-ovate, 2-celled. *Ovary* ovoid, compressed; *style* very short, *stigmas* 3, subulate, papillose all over; *ovule* 1, subsessile, erect. *Utricle* twice as long as the bracts and bracteoles, ovoid, compressed, membranaceous, vesiculose, faintly 3-nerved, irregularly dehiscing, scarcely mucronulate. *Seed* vertical, erect, lenticular, with crustaceous testa, and no aril. *Embryo* annular, surrounding mealy endosperm; cotyledons linear, radicle inferior.

Decumbent annual herb, glabrous or scarcely pubescent. Leaves alternate; limb ovate, entire, acutish or apically retuse, basi-cuneate, long-petiolate. Flowers small, in axillary sympodial glomerules and a terminal raceme, green. Bracts and bracteoles membranaceous, persistent.

Habit of *Euxolus*, but the *absence of perianth*, and there being *only 2 stamens* distinguish it.

Species 1, common over all Argentina, and in N. Patagon.

A. ARGENTINUS Speg.

Stems glabrate or puberulous, rubicund or green, obsoletely striate, 15–50 cm. *Leaves* green, pallid underneath, with prominent whitish pinnate nerves, petioles as long as the limb. *Glomerules* axillary, small, mostly geminate, and an apical thick *raceme; bracts* elliptic, and *bracteoles* twice as long, oblanceolate, mucronulate, glabrous. *Utricles* pallid green, smooth.

(La Plata); N. Patagon., common by roadsides near Carmen.

3. PFAFFIA Mart.

Mostly tomentose herbs or undershrubs, with thick *rootstocks*, and slender, erect *stems; leaves* opposite, sessile or nearly sessile, generally tomentose. *Flowers* in dense, stalked heads or spikes. *Calyx* 5-parted, very hairy. *Staminal* tube long, its lobes ciliate-fimbriate. *Utricle* indehiscent.

Species 15, Brazil. (Fig. in Eng. & Prantl, iii, 1*a*, p. 116.)

P. LANATA (Poir). (*P. tomentosa* Mart.)

Tomentose undershrub. *Leaves* 1 cm. long, subsessile, oval, acute, mucronulate, subrepand-dentate. *Peduncle* long; *heads* solitary, subglobose, sulphur-white. *Sepals* scarcely exceeding the lateral bracts.

(Brazil); Bahia Blanca and N. Patagon.

4. GOMPHRENA Linn.

Branching hirsute-woolly herbs with opposite, entire *leaves*, and mostly swollen nodes. *Calyx* 5-parted. *Staminal* tube elongated, its lobes emarginate; anthers 1-celled. *Stigmas* mostly 2. Utricle ovoid-compressed, indehiscent. *Seed* 1, lenticular.

Species 90, chiefly in Central and S. Amer., 15 in Austral.

1. G. PERENNIS Linn.

Leaves short-petiolate, oblong-lanceolate, attenuate below, acute. *Heads* terminal and lateral, with 2 subfloral leaves; *flowers* shining pale yellowish.

(Argentina); N. Patagon. (?).

2. G. ROSEA Griseb.

Perennial, from a descending rhizome. *Stems* few, subsimple, 20 cm. high, strigose-woolly. *Leaves* lanceolate, acuminate, subsessile, equalling the lower internodes. *Head* terminal, hemispherical. Subfloral leaves 4, ovate-acuminate. *Sepals* woolly below, pink, oblong, linear, denticulate, carinately 1-nerved. Lateral bracts crestless, exceeding the calyx. *Staminal* tube shortly exsert.

(Argentina); probably in N. Patagon.

Family 34. Nyctaginaceæ. Family of Marvel-of-Peru, Four-o'clock.

Mostly herbs, with simple entire *leaves*, and regular, apetalous *flowers*, having inferior, synsepalous, corolla-like *calyx*, usually with an involucre of *bracts*. *Stamens* 1–many, hypogynous. Ovary 1-celled, with 1 basal ovule. *Style* 1, filiform, or none. *Fruit* an anthocarp, being a nut enclosed by the persisting, ribbed or winged base of the calyx.

Species 250, abounding in Amer.

(When the involucre is 1-flowered it and the calyx resemble the double perianth of a sympetalous dichlamyd.)

1. MIRABILIS Linn.

Herbs, branching di-trichotomously, with opposite *leaves*, the lower petiolate, the upper sessile, and calyx-like involucre which encloses 1 to several flowers in *cymes*. *Perianth-tube* long, constricted above the ovary, its limb 5-lobed, plicate and deciduous. *Stamens* 5–6, unequal, exserted, the filaments united below and incurved.

A small widely scattered genus, with 1 species in Himalaya, a few in N. Am., especially Calif., also in Mex., Peru, Chili, Argent. (Fig. in Eng. & Prantl, iii, 1*b*, p. 25.)

M. toscæ (Ltz. sub *Oxybaphus*).

Rhizome thick, woody, sending up many stems. *Leaves* decussate, short-petiolate, subcordate-hastate, crenate, rough, nerves conspicuous underneath; 35 by 20 mm., smaller above. *Flowers* axillary from the upper leaves, 3 in the involucre, which has 5 acuminate processes with glandular hairs. *Stamens* 3. *Style* long, filiform.

(Argentina); N. Patagon.

2. BOUGAINVILLÆA Commers.

Shrubs or trees, often thorny and climbing, with alternate *leaves* and flowers devoid of involucre but inserted on the ribs of 1–3 large colored bracts. *Perianth* tubular-funnelform, twisted, often greenish below and white or pink above, often persisting in fruit as wings. *Stamens* 7–8, united below; anthers didymous, included. *Ovary* stipitate. *Anthocarp* fusiform, 5-costate.

Species 7, in warm parts of S. Amer.

1. BOUGAINVILLÆA PATAGONICA Decne.

Shrubs, with stout branches, unarmed and not well clothed by the fascicles of rather short, oblong-spatulate, subacute leaves. *Flowers* arising from 3 large bracts, larger and broader than the leaves. *Perigonial tube* long, slightly enlarged upwards, and with a 5-lobed spreading limb. *Stamens* 6, hypogynous. *Ovary* long, ovoid, with simple, sublateral *style*.

Patagon.

2. B. SPINOSA (*Tricycle spinosa* Cav.) Eng. & Prantl.

Spinous shrub, 3 meters high, with reddish branches, the spines at length forking apically. *Leaves* fasciculate on short branches, only 8 mm. long, linear-spatulate, coriaceous, glabrous. Flowers 1 cm. long, 1 or few at the nodes, pendulous, with 3 puberulous ovate-cordate bracts. *Perianth* with long, greenish tube, yellow limb, and 5 emarginate lobes. *Stamens* 5–6, unequal. *Ovary* fusiform with lateral style.

(Chili; Argentina); Patagon., near mouth of Rio Chubut. (Dusén.)

In dry places along Rio Negro.

Family 35. AIZOACEÆ (*Ficoideæ*). Carpet-weed Family.

Prostrate, branching herbs or undershrubs, with mostly fleshy *leaves*, often scariously stipulate; and small, regular *flowers*, having a 4–5-partite *calyx*, and *petals* small or none. *Stamens* 4–5 or fewer, perigynous. *Ovary* 3–5-celled, free. *Seeds* numerous. *Capsule* loculicidal or circumscissile. Embryo slender, curved around mealy endosperm.

Species 500, mostly in warm climates.

1. SESUVIUM Linn.

Fleshy, seaside, usually prostrate herbs, with smooth, opposite, exstipulate *leaves*, and solitary or clustered, axillary, 5-merous *flowers*. *Petals* none. *Sepals* colored inside. Styles 3–5. *Capsule* circumscissile. Seeds reniform.

Species 5, tropical and subtropical.

S. PORTULACASTRUM Linn. (non Gray).

Stem prostrate, spreading from a center. *Leaves* linear to lance-oblong, plane. *Flowers* with long or short pedicels. (Fig. in Eng. & Prantl, iii, 1*b*, p. 42 and 36, fig. 12*B*.)

(Old and New Worlds); N. Patagon., by Rio Negro.

2. TETRAGONIA Linn.

Herbs or undershrubs, with thickish, alternate, entire, exstipulate *leaves*, and green to yellow or red, apetalous, axillary *flowers*. *Calyx-tube* adnate to the ovary, bearing 1–more stamens. *Ovary* mostly 3–8-celled, with as many subulate styles and ovules. *Fruit* a winged or horned nut or drupe. *Seeds* subreniform.

Species 20, S. Afr., Orient, Austral. and S. Amer.

T. EXPANSA Murr. New Zealand Spinach.

Annual, with petiolate, ovate-rhomboid *leaves* and sessile *flowers*. *Stamens* in fascicles of 4–5, at each sinus of the calyx. *Fruit* obovoid, 4-horned, 6–8-seeded. Fig. in Eng. & Prantl, iii, 1*b*, p. 45.

(Japan; Australasia; New Zealand; Extratrop. S. Am. and cult.); W. Patagon.

(*T. ameghinoi* Speg. is *Halophytum*, supra p. 372.)

Family 36. PORTULACACEÆ. Purslane Family.

Herbs, rarely somewhat woody, generally fleshy, with regular, perfect, unsymmetrical *flowers*. *Sepals* usually 2, only rarely 5. *Petals* 4–5 or more, hypogynous. *Stamens* hypogynous, as many as the petals or fewer, rarely more. *Ovary* 1-celled, mostly superior; style 2–3-parted. *Capsule* circumscissile, or opening by 3 valves. *Embryo* curved.

Species 125, in tropical and subtropical countries; less abundant in colder parts. *Claytonia*, found in Siberia and N. Amer. and in mountains of Mex. and Cuba, is not found farther south in Amer.; but *C. australasica* Hook. is in Austral. and N. Zeal. *Calandrinia*, with 15 species in Australia, has 60 species in the American cordilleras from California to Patagonia.

KEY TO THE GENERA.

(All these are bisepalous except *Montia*.)

A. Ovary superior.

b. Leaves alternate or basal. Stamens 5 or more. Ovules numerous. Embryo circular around the endosperm. 1. *Calandrinia*.

b2. Leaves alternate. Stamens 8 or more. Seeds numerous. Embryo slightly curved, and endosperm scanty. Involucre consisting of dry imbricating bracts. Undershrub. 2. *Grahamia*.

*b*3. Leaves opposite. Flowers sympetalous, with 2–3 stamens and 3 ovules. Small aquatics. Sepals 3. 3. *Montia.*

*b*4. Stamen 1. Capsule 2-valved, with 1–2 black seeds. 5. *Monocosmia.*

*A*2. Ovary more or less inferior. Stamens 4–many. Seeds numerous. Fleshy herbs with alternate leaves. 4. *Portulaca.*

1. CALANDRINIA H. B. & K.

Leaves alternate or cespitose. *Flowers* solitary and long-stalked, or axillary, or in terminal racemes or heads. *Sepals* 2, ovate. *Petals* generally ephemeral. *Stamens* 5–many. *Ovary* free, many-ovulate. *Style* 3-cleft or sulcate. *Seeds* reniform.

Species 75, W. Amer. and Austral.

KEY TO THE SPECIES.

A. Leaves linear.

b. Scapes 1-flowered. Plants glabrous; flowers purple. *rupestris.*

*b*2. Scapes 1–3-flowered, sepals fimbriate. Plants viscous. *patagonica.*

*b*3. Flowers corymbed. Sepals trifid. *trifida.*

*b*4. Flowers capitate. Sepals 3-toothed. *prostrata.*

*A*2. Leaves lanceolate, all radical. Scapes 1-flowered. *densifolia.*

*A*3. Leaves narrow-oblong, attenuate petiolate, and sessile on stem. Flowers crowded on ends of the branches. *fasciculata.*

1. C. DENSIFOLIA Phil.

Cespitose, small. *Leaves* lanceolate, all radical, densely crowded, acutish. *Peduncles* radical, in fruit twice as long as the leaves. *Calyx* glabrous, its leaves ovate, entire, acute. *Capsule* as long as the calyx. *Seeds* smooth, shining.

(Andine elevations by Coquimbo.) Cordilleras of S. Patagon., on damp ground (J. B. Hatcher; in fruit Feb. 6, 1897). Rootstock as thick as a crow-quill. Leaves 20 by 3 mm.; pedicels 1-flowered; petals 4, ovate, subacute, twice as long as the sepals, thin-margined.

2. C. FASCICULATA Phil.

Glabrous. Stem erect, branching, 10 cm. high. *Leaves* narrow, oblong, attenuately petiolate; the cauline few and subsessile. *Flowers* crowded on the ends of the branches, sessile. Bracts large, orbicular, mucronate. *Sepals* subscarious, unequal, the outer larger and orbicular; the inner ovate. *Seeds* subpunctate, shining.

(Andes of Peru.)

3. Calandrinia patagonica Speg.

Perennial, low, glaucescent, viscous. *Leaves* fasciculate at the base of the scapes, linear, subacute. *Scapes* scarcely surpassing the leaves, 1–3-flowered. *Sepals* ovate, glandular-viscous, fimbriate on the back and margin, shorter than the glabrous, milky, persistent *petals* and ovate *capsules*. Rhizome slender, long; branches above ground 3–6 cm. high, densely leafy at base and scape-like, with few flowers above.

Dry, sandy places by Rio Chico de Sta. Cruz and by Lago Argentino.

4. C. prostrata Phil.

Prostrate annual, usually hairy. *Leaves* linear, or attenuate below, hispid, marginally appressed-ciliate. *Flowers* in dense heads, axillary and terminal; upper leaves as an involucre, not surpassing the flowers. *Sepals* dorsally hirsute, with compound hairs, mostly tridentate. Corolla purple. Seeds many, shining.

(Chili); dry meadows near Carren-leofú.

5. C. rupestris Gay.

Glabrous. *Stems* 25–50 mm. high, multicipital, cespitose. *Leaves* crowded at base, narrow-linear, fleshy, acute, entire, 12 mm. long. *Peduncles* radical, naked, simple, 1-flowered, 3–4 times as long as leaves. *Flowers* purple, naked; *style* 1, very short; *stigmas* 3, thick, subconnate. *Seeds* glabrous, rugulose.

(Chilian cordilleras); Patagon., Chubut, in stony parts of mountains. Leaves somewhat longer than in the description (to 25 mm.), their apex very attenuate, also attenuate downwards. Scapes rather rigid. (Speg.) By Rio Sta. Cruz. (Hatcher.)

6. C. trifida Hook. & Arn.

Annual, with stems more or less erect, simple, hairy. *Leaves* linear, acute, hairy, the radical elongated; the cauline long-ciliated. *Corymbs* dense, axillary. Lower *bracts* long-ciliated, exceeding the inflorescence. *Sepals* ovate, trifid, long-ciliate, hairy on the borders. *Stamens* 5.

(Valparaiso); Chubut, near Cholila. "The leaves may be obtuse or acute in the same plant. Seeds shining, gently reticulate-impressed. Is it *C. floribunda* Ph.?" (Speg.)

2. GRAHAMIA Gill. (*Xeranthus* Miers.)

Shrub, with alternate oblong, fleshy *leaves*, and *stipules* resolved into hairs. *Flowers* terminal, solitary, handsome. *Sepals* 2, rigid, striate, scarious-margined. *Bracts* numerous, imbricate, scarious. *Stamens* many, borne on the base of the petals. *Style* 4–5 cleft. *Seeds* winged.

Species 1, viz.:

G. BRACTEATA Gill.

Flowers white, the filaments reddish below.

N. Patagon.

3. MONTIA Linn. Water-chickweed.

Small, glabrous, aquatic annuals, tufted and freely branched. *Leaves* opposite, spatulate or obovate. *Flowers* nodding, solitary or racemed. *Sepals* 3. *Petals* ovate-oblong, united at the base. *Stamens* 2–3. *Capsule* 3-valved.

Species 1, in many local varieties, which may be regarded as separate species; in Eurasia, N. Afr., N. Amer. and by the Andes to Chili; also in Austral. and N. Zeal. and Kerguelen's I.

1. M. FONTANA Linn.

Inflorescence axillary and in terminal, panicled *racemes*. (Fig. 21 in Eng. & Prantl, iii, 1*b*, p. 58.) Falklands; Staaten I.; W. Magellan, at 400 meters elevation. (Dusén.)

2. M. GIBBA Griseb.

Sepals obscurely 3-lobed, gibbous on the back.

S. Chili.

4. PORTULACA Linn. Purslane.

Spreading, much-branched, fleshy herbs, with terminal *flowers*. *Sepals* united partly to each other and to the ovary. *Petals* 4–6, mostly 5, inserted on the calyx, fugacious. *Stamens* 7–many, on the calyx. *Style* 3–9-parted. *Ovules* many. Capsule circumscissile.

Species 20, tropical and subtrop.

1. P. OLERACEA Linn.

Leaves alternate or crowded at the ends of the branches, glabrous, fleshy, obovate-cuneate, rounded at the top. *Flowers* yellow; sepals broad, keeled, acutish. (Widely distributed in warm climates.)

N. Patagon., along Rio Negro., common.

2. PORTULACA PILOSA Linn.

Leaves linear, terete, obtuse, with tufts of hairs in the axils. *Flowers* sessile. *Petals* red, twice as long as the sepals.

(U. S. to S. Amer.); N. Patagon., along the Rio Negro, not rare.

P. PILOSA MUCRONATA (Link.).

Leaves oblong, sharply acuminate.

5. MONOCOSMIA Fenzl.

Sepals 2, persistent, with a dorsal nerve. *Petals* 3–4. *Stamen* 1, *Ovary* superior, with 1 *style* and 2 terminal *stigmas*, unilocular; *ovules* 3–4, basal. *Capsule* bivalved, 1–2-seeded. Annual herb, with prostrate stems. many leaves and minute flowers, in terminal and axillary inflorescences.

Species 1, Chili, Patagonia.

M. MONANDRA (R. & Pav. sub *Talinum*) Pax.

Basal *leaves* rhomboid-lanceolate, petiolate, cauline, sessile. *Seed* black.

(Chili); Chubut, in hills along Carren-leofú.

Family 37. CARYOPHYLLACEÆ. The Pink Family.

Herbs, with opposite, entire leaves, the nodes mostly swollen, and perfect, regular, 4–5-merous flowers with persistent calyx, free petals, stamens mostly twice as many, and superior 1-celled ovary with 2–5 styles and free central placenta. Embryo curved around endosperm. Petals sometimes none; and fruit sometimes a 1-seeded achene.

Species 1,500, abounding chiefly in the northern hemisphere (including *Paronychieæ* and *Illecebreæ* which are sometimes perigynous).

KEY TO THE GENERA.

*A*1. Sepals united (*Silenoideæ*). Stamens hypogynous. Leaves exstipulate.

b. Styles 3 (4). Capsule-teeth twice as many. Capsule several-celled at its base.
1. *Silene*, p. 383.

*b*2. Styles 3–5. Capsule-teeth twice as many; capsule 1-celled from the base.
3. *Melandryum*, p. 384.

*b*3. Styles and capsule-teeth usually 5. Capsule 1-celled throughout.
2. *Lychnis*, p. 384.

*A*2. Sepals distinct or nearly so (*Alsinoideæ*). Stamens often perigynous.

b. Fruit a dehiscent capsule.

c. Exstipulate.
d. Petals deeply 2-cleft; rarely none.
e. Capsule subovoid, dehiscing by valves. Styles 3 (4–5), antisepalous. 4. *Alsine* (*Stellaria*), p. 385.
e2. Capsule cylindric, dehiscing by teeth. Styles as many as, and opposite, sepals. 5. *Cerastium*, p. 387.
d2. Petals entire, or nearly so; rarely none.
e. Gynecium isomerous (or pliomerous).
f. Petals often none or short. Stamens isomerous and episepalous, or diplomerous. Minute plants. 6. *Sagina*, p. 390.
f2. Petals none. Stamens isomerous but alternisepalous. 7. *Colobanthus*, p. 390.
e2. Gynecium oligomerous, 1-celled. Carpels usually more than 2. Seeds many.
f. Carpels with as many teeth as the styles. Disk thick, lobed. Maritime plants. 8. *Ammodenia*, p. 393.
f2. Carpels with twice as many teeth as the styles. Disk annular. 9. *Arenaria*, p. 393.
c2. With scarious stipules. Carpels and styles 3. (*Tissa*, *Spergularia*.) 10. *Buda*, p. 395.
c3. With stipules. Leaves 4-ranked. Calyx-lobes, stamens and staminodes each 4. Ovary 1-celled, 1-ovuled. 14. *Philippiella*, p. 397.
b2. Fruit an achene, 1-seeded. Stamens perigynous.
c. Leaves stipulate.
d. Embryo curved. Sepals awn-tipped. Stamens 5 (3–4). Style filiform, 2-cleft. Petals hair-like. 11. *Paronychia*, p. 396.
d2. Embryo straight. Sepals ending in a stout spine. 13. *Acanthonychia*, p. 397.
d3. Small, sessile leaves, with small, green flowers in axillary clusters. 12. *Herniaria*, p. 396.
c2. Leaves exstipulate. Calyx 4–5-lobed. Stamens 1–10. Styles 2, distinct. *Scleranthus*.

1. SILENE Linn. Campion.

Calyx synsepalous, 5-toothed; not bracted at base. *Petals* 5, narrow, clawed. *Stamens* 10. *Styles* mostly 3; *capsules* 6- or 3-toothed.

Species 250, widely distributed.

1. S. ANTIRRHINA Linn.

Annual, nearly glabrous. *Stem* erect, branching, leafy. *Leaves* oblanceolate, acute, subciliate, the upper narrower and smaller. *Flowers* small, on filiform pedicels, paniculate. *Calyx* narrow-ovoid, its teeth ovate. Petals obcordate, crowned.

(In E. United States); N. Patagon. by Carmen.

2. SILENE ANTIRRHINA PTERONEMA J. Ball.

Calyx-veins as prominent ridges. *Calyx-teeth* longer. *Capsule* ovoid, not globose.

Valleys near Bahia Blanca, to N. Patagon., Rio Negro.

3. S. BEHEN L.

Glabrous, branching, with *lower leaves* petiolate, obovate-lanceolate, mucronulate, *upper leaves* sessile, ovate-lanceolate. *Calyx* ovate-inflated, striate-veiny. *Petals* pale pink, 2 lobed, the lobes short, obtuse, with 2 bicuspid appendages.—Crete, etc.

S. BEHEN CUCUBALUS (W.) O. Ktze. (*Silene cucubalus* Wibel.)

Leaves ovate. Capsule berry-like. A diffuse climber.

(Eur.; N. Afr.; Himalaya); Patagon.

2. LYCHNIS Linn.

Calyx synsepalous, 5-toothed, not bracted at base. *Petals* 5, clawed, generally crowned. *Stamens* 10. *Ovary* 5- (rarely 3–4-) valved; styles of the same number.

Species 35, Eurasian; abounding in Central and N. E. Asia, whence it came to N. W. Amer., thence to mountains of S. Amer. and Patagon.

L. ANTARCTICA O. Kuntz. (*L. chilensis* Speg. non Gay.)

Scapes often with 2–3 pairs of leaves. *Calyx* minutely glandular-puberulous (not crispidulous as in *L. chilensis* Gay).

S. Patagon., rocks near Lago Argentina. ("Probably a depauperate form of *Melandryum patagonicum* Speg.")

3. MELANDRYUM Roehl.

Calyx ventricose to campanulate, 10–20-ribbed. *Petals* bifid, crowned. *Capsule* 3–5-merous, its teeth twice as many.

Species 60, Eurasia, Nearctic; Andes.

1. M. CHUBUTENSE (Speg. sub *Lychnis*).

Perennial, densely cespitose, with fasciculate branchlets. *Leaves* very narrowly linear, acute, glabrous, entire, marginally ciliolate. *Scapes* elongate, pubescent, 2–3-nodose, apically 1–3-flowered. *Calyx* ovate,

glandular, pubescent, 10-nerved, with broad teeth. *Capsule* scarcely exserted.

Patagon., Chubut, by Rio Carren-leofú. "Distinguishable from *M. magellanicum* by its leaves being mostly broader, rigid, acute or subpungent, strongly carinate, margin often pectinate-ciliolate." (Speg.)

2. MELANDRYUM MAGELLANICUM (Desr. sub *Lychnis*) Fenzl.

Subvillous. *Roots* suffrutescent, bearing several rosettes of linear, grass-like *leaves*, and 3 pairs of rather broader, cauline leaves on the *scape*, 12 cm. high; mostly 1-flowered. *Petals* bifid, exceeding the campanulate *calyx*.

Allied to *M. apetalum* (L.) of the Arctic regions.

Patagon. Magellan (Hatcher); N. and E. Fuegia. (Dusén, "of the steppe-flora.")

3. M. PATAGONICUM Speg.

Perennial, laxly cespitose. *Branches* crowded, decumbent, densely leafy upwards. *Leaves* elliptic-lanceolate, acute, base very attenuate, densely glandular on both surfaces, hispid-velvety. *Scapes* axillary, long, naked, pubescent, 1-flowered. *Calyx* green, glandular-pubescent, obtusely 5-toothed.

Patagon., Chubut, by Lago Fontana.

4. ALSINE Linn. 1737. (*Stellaria* L. 1753.)

Tufted annuals, generally diffuse, with cymose, white *flowers*. *Petals* 2-partite, rarely none. *Styles* usually 3, rarely 4–5, oppositisepalous.

Capsule ovoid, opening by twice as many valves as the styles.

Species 75; in temperate and cold climates. None in Brazil; a few in Chili.

KEY TO THE SPECIES.

A. Flowers axillary only. Leaves narrow.	
b. Leaves narrow-linear.	*axillaris.*
b2. Leaves linear-lanceolate.	*debilis.*
A2. Leaves linear. Flowers lateral or terminal, long-pediceled.	*chubutensis.*
A3. Flowers axillary and in terminal cymes. Leaves broader.	
b. Leaves lanceolate-oblong. Sepals exceeding the bifid petals.	*lanceolata.*
b2. Leaves lanceolate. Petals short or none. Seeds smooth.	*borealis.*
b3. Leaves rounded, 3-nerved.	*rotundifolia.*
b4. Leaves ovate to cordate. Ciliary line along the stem.	*media.*
b5. Lower leaves petiolate-cordate, upper leaves sessile, lanceolate.	*nemorum.*

1. ALSINE AXILLARIS (Phil.).

Glabrous, branching, cespitose, 20 mm. high, internodes twice as long as the linear *leaves*, which are attenuate both ways. *Peduncles* axillary, 1-flowered, equalling the leaf. *Petals* narrow, bifid, equalling the ovate-oblong *sepals*. *Capsule* scarcely exceeding the calyx.

(N. Chili); E. Fuegia.

2. A. BOREALIS (Bigel.) Brit.

Weak; much branched, *Leaves* lanceolate, or broader, 12–36 mm. long, acute, sessile. *Cyme* leafy. *Flowers* 4–8 mm. broad. *Petals* 2–5, shorter than the sepals, or none. *Capsules* exceeding the sepals. *Seeds* smooth.

(Eurasia; N. United States); S. Patagon., Killik Aike by Rio Gallegos. (J. B. Hatcher, Dec. 13, 1896.)

3. A. CHUBUTENSIS (Speg. sub *Stellaria*).

Slender, green, glabrous annual, 1–5 cm. high, decumbent or ascending. *Leaves* 1-nerved, linear, the lower obtusish, the others rather acute, about half as long as the internodes or more. *Flowers* erect, lateral or terminal, with pedicel as long, or twice as long as the subtending leaf. *Sepals* green, rather rigid, lanceolate, 3-nerved, acute. *Petals* white, bifid from the base, the segments narrow-linear, not or scarcely as long as the sepals.

Patagonia, in shady woods near Carren-leofú.

4. A. DEBILIS (d'Urv.).

Glabrous. *Stems* slender, prostrate, lax-cespitose, divaricately branching. *Leaves* flaccid, linear-lanceolate, subacute, 3-nerved; their margins finely cartilaginous, entire. *Peduncles* solitary in the axils, 1-flowered, shorter than the leaves. *Petals* shorter than the sepals. *Capsule* exserted.

Patagonia, by Rio Chico; Falklands; Staaten I.; N. and E. Fuegia. (Dusén, "in steppe-flora, especially in swamps.") "Allied to a Tasmanian species." (J. D. Hooker.)

A. DEBILIS CONDENSATA (A. Gray).

Leaves narrow-linear to almost filiform, slightly revolute.

Orange Harbor, Fuegia.

5. ALSINE LANCEOLATA (Poir).

Leaves lanceolate-oblong, acute, the *panicle* pubescent. *Sepals* exceeding the bifid petals.

Magellan. Fuegia.

(S. LANUGINOSA Rohrb. = *Arenaria lanuginosa*.)

6. A. MEDIA (Linn.). Common Chickweed.

Weak, tufted annual, mostly glabrous, but with a line of cilia along the stem, branches and petioles. *Leaves* ovate or oval, or the lower cordate, and petiolate. *Flowers* in terminal, leafy cymes, or also solitary on axillary pedicels. *Sepals* exceeding the petals.

(Eurasia, and naturalized in N. Am.); at Punta Arenas (J. B. Hatcher, Jan. 10, 1897); Falklands; Fuegia, Ushuaia. Rio Negro; L. Nahuelhaupi.

7. A. NEMORUM (L. sub *Stellaria*).

Stems weak, glabrous below, downy above. Lower leaves petiolate, cordate; upper *leaves* sessile, lanceolate. *Panicle* dichotomous. *Petals* bifid, twice as long as the sepals. *Seeds* orbicular, compressed, marginally tubercled.

(Old World; Bolivia); W. Patagon.

8. A. ROTUNDIFOLIA (Poir).

Branches virgate. *Leaves* petiolate, rounded, fleshy, 3-nerved, submucronate. *Panicle* terminal. *Petals* exceeding the sepals.

Magellan (not well known).

5. CERASTIUM Linn. Chickweed.

Suberect herbs, with terminal cymes. Sepals 5 (4), distinct. Petals emarginate or bifid, rarely none. Stamens 10, rarely fewer. Capsule cylindric, often curved, 10- (8-)toothed. Styles as many as the sepals, rarely fewer. Seeds rough. Flowers occasionally few or solitary.

Species 50, chiefly in temperate climates.

KEY TO THE SPECIES.

A. Leaves mostly sublinear. Flowers in cymes, or subpaniculate.

b. Petals exceeding the sepals.

c. Basal leaves linear-oblong, stem leaves linear-lanceolate. Petal obcordate. *arvense.*

c2. Leaves acuminate. Glandular hairy. *strictum.*
b2. Petals small. Leaves obtuse, viscid. Capsule curved upwards. *vulgatum.*
A2. Leaves linear, very long. Dichotomously umbellate. Petals as long as the sepals. *commersonianum.*
A3. Leaves oblong-linear, whorled, glabrous. Peduncles 3-flowered. *colsmanni.*
A4. Leaves lance-elliptical to linear-oblong, glandular. Peduncles 1- (2-)flowered. *fuegianum.*
A5. Leaves subovate, obtuse. Viscid. Cymes at length lax. Petals shorter than sepals.
b. Stamens 10. Cymes glomerate at first. *glomeratum.*
b2. Stamens 4–5. Tufted annual. *semidecandrum.*

1. CERASTIUM ARVENSE Linn.

Perennial, nearly glabrous, rather slender. Lower *leaves* and leaves of sterile shoots linear-oblong, crowded. Stem leaves distant, linear-lanceolate. *Flowers* cymose; *pedicels* slender; *petals* obcordate, greatly exceeding the sepals.

(Temperate parts of Eurasia and N. Amer. Common in Chili and S. Brazil.) Everywhere on the pampas of S. Patagon. (Hatcher & Peterson); Punta Arenas; Fuegia to Cape Horn. Falklands.

C. ARVENSE FUEGIANUM Hook. f.

Leaves ovate to ovate-lanceolate, long, coriaceous, imbricated. Flower solitary, terminal, large. Capsule slightly exceeding the calyx.

C. ARVENSE NERVOSUM (Naud.).

Specimens 1-flowered; *sepals* more or less purpurascent at the apex, laxly and minutely puberulous.

S. Andine Patagon., Baguales.

C. ARVENSE PARVIFLORUM Dusén.

Densely branching, the branches small and glandular. Panicles dense. Sepals scarcely scarious-edged. Petals scarious, exceeding the sepals.

S. Fuegia, Rio Grande. (Dusén.)

C. ARVENSE STRICTUM Hook. f.

Erect, strict, *flowers* paniculate.

2. C. COLSMANNI Lehm.

Stem strict. *Leaves* in whorls, fasciculate, reflexed, oblong-linear, glabrous. *Peduncles* terminal, about 3-flowered.

(Central European Alps.) Patagonia, Magellan.

3. CERASTIUM COMMERSONIANUM Ser. (*C. chilense* Baill.)

Stem dichotomous, angular, viscid. *Leaves* linear, very long, sessile. *Flowers* dichotomously umbellate. *Sepals* lanceolate, acute, scarcely membranaceous on margin. *Petals* and capsule as long as the sepals.

"Distinguished from *C. arvense* mainly by the foliaceous bracts with the edges not scarious." (J. Ball.)

(Montevideo; Argentina); N. Patagon.

4. C. FUEGIANUM Alboff.

Low, cespitose, glandular-pubescent. *Leaves* many, nearly 1 cm. long, lance-elliptical to linear-oblong, sessile, united at base, subobtuse, nerves prominent underneath. *Flowers* 1 (2), terminal, short-peduncled, 2-bracted. *Sepals* lanceolate, glandular. *Petals* oblong-obovate.

S. Fuegia, Ushuaia.

5. C. GLOMERATUM Thuill. (*C. viscosum* L.)

Stem hairy, viscid, spreading. *Leaves* ovate or obovate, obtuse, viscid. *Bracts* small, herbaceous. *Flowers* in glomerate cymes, at length paniculate. *Petals* shorter than the acute *sepals*.

(Eur., nat. in N. and Cent. Amer.); N. Patagon., not rare by Lago Nahuel-huapi and Rio Negro.

C. MAGELLANICUM Phil. is probably *C. arvense* L., changed in habit and form of leaves and indumentum.—Rohrbach in Linnæa, 37, 304.

6. C. SEMIDECANDRUM Linn.

Small, or 5-stamened Chickweed. Low tufted annual, finely viscid-pubescent. *Leaves* ovate-obtuse, only 4–8 mm. long. *Cymes* with the pedicels at length exceeding the sepals. *Flowers* small; *stamens* usually 4 or 5. *Petals* shorter than the sepals.

(Asia-minor, Eur.; E. United States); by water courses at Bahia Blanca and probably in N. Patagon.

7. C. STRICTUM Linn.

Perennial, with declinate *stems; leaves* sublinear, acuminate, glabrous or subhirsute. *Peduncles* glandular-pubescent. *Petals* twice as large as calyx. *Capsules* oblong.

(Eur.); S. Patagon., in gravelly meadows by San Julian; Chubut, common in elevated plains.

8. CERASTIUM VULGATUM Linn. (including *C. triviale* Link).

Tufted, viscid-pubescent. *Leaves* linear, obtuse. *Flowers* lax-cymose. *Pedicels* at length exceeding the sepals. *Capsules* curved upwards.

(Eurasia; N. Amer.); Magellan; Falklands, introduced.

6. SAGINA Linn. Pearl-wort.

Tufted herbs, with subulate *leaves* and small, pediceled, whitish *flowers*. *Sepals* 4–5. *Petals* 4–5, entire or emarginate, or none. *Stamens* varying to twice as many. *Ovary* 1-celled; ovules many. *Styles* as many as the sepals. *Capsule* 4–5-valved, dehiscing to the base; valves antisepalous.

Species 10, of the N. Hemisphere.

1. S. APETALA Linn.

Erect or ascending, filiform annual, 2–10 cm. high. *Leaves* linear-subulate, glabrous or subciliate, 2–8 mm. long. *Flowers* 2 mm. broad or less; on erect, capillary pedicels. *Sepals* 4, obtuse; *petals* none or minute. *Capsule* exceeding the perianth.

(Eur., N. Amer.); N. Patagon., meadows by Rio Negro. The Patagonian forms are glabrous, of two varieties: (1) *melanopotamica*, with long internodes; (2) *paludosa*, erect and rigid, only 1–3 cm. high, leaves long-acutate-aristulate.

2. S. PROCUMBENS Linn.

Plant depressed, 25–75 mm. high. *Flowers* mostly 4-merous. *Petals* short, usually present. *Capsule* at length nodding. *Seeds* dark red, pitted.

(Eurasia and E. N. Amer. and in S. Amer. Cordilleras.) Falklands, abundant near the sea. Fuegia (?).

7. COLOBANTHUS Bartl.

Cespitose herbs, often fleshy, with imbricate *leaves* and mostly solitary, stalked *flowers*. *Sepals* 4–5, free. *Petals* none. Stamens, *styles* and valves of the capsule as many as and alternate with the sepals.

Species 10, in mountains of Antarctic Amer. and of Chili. Also in Austral., N. Zeal., Kerguelen and Amsterdam and Auckland Is.

In *Colobanthus* the styles alternate with the sepals. Benth. & Hook. represent it as having the valves oppositisepalous; but Flora Antarctica is different; this is confirmed by Hatcher's specimen of *C. billardieri* and by Eng. & Prantl, iii, 1*b*, p. 78.

KEY TO THE SPECIES.

A. Leaves small.	
b. Sepals ovate, obtuse.	*cherlerioides*.
b2. Sepals acute.	*lycopodioides*.
A2. Leaves narrow-linear.	
b. Leaves pectinate. Sepals ovate, setulose.	*chubutensis*.
b2. Leaves spiny-tipped. Sepals acute.	*quitensis*.
A3. Leaves linear, obtuse or mucronate. Sepals ovate, obtuse.	*crassifolius*.
A4. Leaves linear-subulate or linear-lanceolate, imbricate. Sepals lance-acuminate.	*subulatus*.
A5. Leaves thick, obtusely-acutish. Sepals lanceolate, acute.	*billardieri*.

1. COLOBANTHUS BILLARDIERI Fenzl.

Stout, short stems, with thick, pallid *leaves*, "obtusely-acutish," about 15 mm. by 1.7 mm.; and long, straight *scapes*. *Sepals* lanceolate, acute.

(In Australia, New Zeal., Campbell's I., "banks near the sea." Patagon., by Rio Coy and Cabo Negro; in fruit Dec. 17, 1896. Seeds crimson, smooth.)

2. C. CHERLERIOIDES Hook. f.

Densely cespitose, pulvinate, the branches fastigiate, leafy. *Leaves* small, closely imbricate, short-ovate, subacute, coriaceous, united at base into a broad sheath; their margins subciliate. *Peduncles* very short. *Flowers* 5-merous, sessile among the upper leaves. *Sepals* broad, ovate, obtuse. *Capsule* cleft to the middle.

(Chili, at great elevations.) Patagonia (?).

3. C. CHUBUTENSIS Speg.

Hirsute perennial, with robust, many-headed *caudex*. *Leaves* narrowly linear, acutish, marginally pectinate-setose towards the base, elsewhere having few appressed setulæ. *Scapes* twice as long as the leaves, glabrous, few-leaved, corymbose. *Sepals* ovate, glabrous, marginally setulose; *corollas* violaceous, glabrous. *Stamens* 5–6. *Capsule* one third exsert. *Seeds* wingless, shining, reticulately impressed.

Chubut, in dry hills, near Cholila.

4. COLOBANTHUS CRASSIFOLIUS Hook. f.

Glabrous, thickish, stems numerous, erect, branching. *Leaves* linear, obtuse or mucronate, sheathing at base. *Peduncles* shorter than the leaves, elongating in fruit. *Sepals* ovate or ovate-lanceolate, obtuse, equalling or exceeding the 5-valved capsule. *Seeds* dark-red, pubescent.

Falklands, Magellan to Cape Horn. S. Patagon. by Rio Gallegos. (Nordenskj., "by brooks, etc., over the steppes.") Fuegia, common near the coast.

C. CRASSIFOLIUS ARETIOIDES (Gill.).

Root fleshy. Calyx 5-parted, the segments ovate. Capsule exceeding the calyx.

5. C. LYCOPODIOIDES Griseb. (*C. lechleri* Phil. *C. polycnemoides* Hier.)

Densely tufted, smooth, coriaceous. *Stems* erect, branching, the branches spreading. *Leaves* small, ovate-lanceolate, united at the base; acute-concave above. *Peduncles* terminal, 1–2-flowered, shorter than the leaves, not elongated in fruit. *Flowers* 5-merous, very small, axillary. *Sepals* acute, twice as long as the 5-valved *capsule*. Forming dense peat.

(Andes); S. Patagon.; Magellan, Elizabeth I. N. Fuegia.

(*C. muscoides* from Auckland Isles has fine moss-like leaves.)

6. C. QUITENSIS Bartl.

Plant corticose, extensive hard turf springing from thick roots. *Leaves* in radical rosettes, very narrow-linear, acute, spiny-tipped, rather fleshy: 2 cm. long. *Peduncles* longer, twice-jointed in the lower part. *Flowers* 5-merous. *Sepals* acute. *Seeds* on a long funicle.

(Asia; Arctic America; Rocky Mts.; Cordilleras); Cabo Negro and Rio Coy. (Hatcher.)

C. QUITENSIS var. Harder cespitose. Leaves shorter, equalling the peduncles.

(Rocks of Chiloe); Magellan.

7. C. SUBULATUS (d'Urv. sub *Sagina*) Hook. f.

Low, bushy, like *Lycopodium*. *Stem* covered by the imbricated leaves, which are linear-subulate or linear-lanceolate. *Sepals* lance-acuminate. *Capsule* 2–5 mm. long, ovoid, 4–5-valved, the valves apically recurved.

S. Patagon.; Magellan, N. and S. Fuegia (Dusén, "near Ushuaia at 500–1,000 m. above the sea.")

8. AMMODENIA Gmel. (*Honkenya* Ehrh.)

Perennial, fleshy, maritime herbs with rather large, shining, decussate *leaves*, and rather small, 4–5-merous, polygamous *flowers*, *petals* entire, and *stamens* twice as many. *Disk* prominent, 8–10-lobed. *Styles* 3–5; *capsule* globose, 3–5-valved.

Species 1, viz.:

A. PEPLOIDES (L. sub *Arenaria;* Wahl. sub *Alsine*). Sea-purslane. With creeping *rhizome*, 4-angled *stem*, and yellowish-green *leaves*. *Seeds* about 10, black.

Seabeaches through the N. Temperate zone. S. Patagon. (J. B. Hatcher.)

(The form found in California is considered by some authors as a separate species, *A. oblongifolia*).

9. ARENARIA Linn. Sandwort.

Generally tufted, with terminal cymose or capitate, often solitary, 5-merous, white *flowers*. *Petals* scarcely emarginate, rarely none. *Stamens* 10. *Styles* usually fewer than the sepals. *Capsules* dehiscing by teeth. *Seeds* reniform-globose.

Species 150, extra-tropical.

KEY TO THE SPECIES.

A. Leaves 4-ranked, imbricated.	*dicranoides.*
A2. Leaves opposite.	
b. Flowers solitary.	
c. Leaves short, rough.	*alsinoides.*
c2. Leaves acuminate, basi-attenuate, hairy.	*lanuginosa.*
c3. Leaves thickish, close, awned. Petals none.	*serpens andina.*
b2. Flowers few.	
c. Leaves lance-linear, broad in the middle.	*patagonica.*
c2. Leaves oblong, obtuse, thickish.	
d. Petals short. Long creepers.	*serpens.*
d2. Petals exceeding sepals. Stems short.	*serpylloides.*

1. A. ALSINOIDES Willd.

Stems diffuse, furrowed or quadrangular upward; branches opposite mostly and pubescent, the hairs uncinately reflexed. *Leaves* linear or subulate, or broad, usually shorter than the internodes, puberulent, sca-

brous. *Flowers* solitary on long axillary, filiform peduncles, puberulous, in fruit curved upwards. *Calyx-lobes* ovate, acuminate, carinate. *Petals* oblong-obtuse, white, shorter than the calyx; rarely none. *Ovary* subglobose, 6-valved; few-seeded.

Variable. One form is low, with simple, 1-flowered stems and short, pungent leaves. Inflorescence sometimes diffuse.

(N. & S. Amer.) S. Patagon. (Hatcher.)

2. ARENARIA DICRANOIDES H. B. & K. (*A. radians* Benth.)

Cespitose, glabrous. *Leaves* imbricate in 4 ranks, ovate-lanceolate, acute, concave, 1-nerved, ciliate, 4–5 cm. long, connate at the base. *Flowers* terminal, solitary, sessile, digynous. *Calyx-leaves* oblong, acute. *Petals* spatulate, exceeding the calyx. *Filaments* connate at base. *Styles* 2. *Seeds* 4.

(Mt. Antisana; Bolivia, per Gray Herbm.); S. Patagon. (Hatcher. The leaves have black spots, consisting of ascospores of fungus.)

(A. GRANDIS = *Buda grandis.*)

3. A. LANUGINOSA Rohrb.

Lax, procumbent, puberulous. *Leaves* linear, or ovate-lanceolate, acuminate, attenuate at the base. *Flowers* solitary, axillary. *Calyx-segments* carinate, acuminate. *Seeds* lenticular, smooth, shining.

(Mex. to Argent.) (Probably the same as *A. alsinoides* W.)

A. LANUGINOSA DIFFUSA (*A. diffusa* Ell.).

(Bolivia); Patagon.

4. A. PATAGONICA Phil. (*A. palustris patagonica* Reiche.)

Stems rough with remains of dead leaves *Leaves* lance-linear, broad in the middle. *Flowers* on the apex of the branches, not crowded. *Petals* lanceolate, slightly exceeding the calyx.

Patagonia.

(Philippi's description seems to belong to a different plant. That given above is chiefly from Reiche.)

5. A. SERPENS H. B. & K.

Glabrous, much branching, with long creepers. *Leaves* oblong, subspatulate, obtuse, somewhat fleshy, veinless, basiciliate. *Petals* scarcely exceeding the sepals. *Seeds* about 15, smooth and shining.

(Mex., Mt. Chimborazo.) S. Patagon. (Hatcher.) "Everywhere over all Patagonia; variable."

ARENARIA SERPENS ANDINA Rohrb.

Leaves close, thickish, subaristate. *Flowers* solitary, terminal. *Petal* none. *Stamens* 5.

(Bolivia); Patagonia.

A. SERPENS ROBUSTA Speg.

Leaves linear-lanceolate, fleshy, green to purplish.

In saline places near Rio Chico de la Sta. Cruz.

6. A. SERPYLLOIDES Naud.

Stems short, ascending; cortex white, glaucescent. *Leaves* not very remote, somewhat fleshy, oblong-obovate or cuneate, obtuse. *Flowers* sparse at the ends of the branches, terminal and axillary, short-pediceled. *Calyx-lobes* with non-inflexed apex. *Petals* half-longer than the calyx.

("Var. of *A. serpens*" Rohrbach.)

Patagonia, by saline lakes near Golfo de San Jorge.

A. SERPYLLOIDES ANDICOLA (Gill. as *A. andicola*).

Leaves linear-oblong, subspatulate. *Peduncles* axillary, 1-flowered, longer than the leaf. *Sepals* obtuse, as long as the petals. *Capsule* about 4-valved. *Seeds* smooth, black.

(Chili): Patagon, Valley of Rio Gallegos (Nordensk.); and by Rio Sta. Cruz.

10. BUDA Adans (1763). Sandspurrey. (*Tissa* Adans, 1763. *Spergularia* Pers., 1805. *Lepigonum* Wahl., 1820.)

Low herbs, with very narrow *leaves*, having scaly, thin *stipules*. *Sepals* 5. *Petals* 5, entire. *Stamens* 2–10. *Styles* and valves of capsule mostly 3, rarely 5, the valves then alternisepalous.

Species 4, in temperate regions, especially saline and littoral.

1. B. GRANDIS (H. B. & K. sub *Arenaria*).

Perennial, suffrutescent, *stems* erect, glandular-hairy above. *Leaves* whorled, exceeding the internodes. Stipules united at their base. *Calyx*

glandular-pubescent, 5–6 mm. long. *Petals* nearly as long. *Capsule* slightly longer. *Seed* with a white wing. Flowers secund.

(Brazil, Chili); Patagon, in meadows by San Julian; forms with a short glandular indumentum, but scarcely making a viscous variety.

2. BUDA MARINA Dumort. (*Arenaria media* DC., non L.; *A. rubra* var. *marina* L.)

Leaves semicylindrical, fleshy, as long as the internodes. *Sepals* lance-ovate, obtusish, scarious-margined. *Peduncles* after flowering deflexed. *Seeds* winged.

(Europe, in saline meadows by the sea; U. S. along the Atlantic); Patagon.

3. B. PLATENSIS (Camb.).

Stems slender. *Stipules* subequal, united half or third way up. *Petals* in the lower flowers ovate; in the upper none. *Capsule* slightly exserted. *Seeds* tubercled.

(Chili; Argentina); N. Patagon. (?).

11. PARONYCHIA Juss.

Tufted herbs, with scarious *stipules* and *bracts;* and small, clustered, apetalous *flowers*. *Calyx* 5-parted, the segments mostly bristle-pointed. *Stamens* 5, or with 5 additional staminodes. *Style* 2-cleft. *Utricle* 1-seeded.

Species 40, in warm and temperate climates.

P. CHILENSIS DC.

Root fruticose. *Stems* diffused, cespitose. *Leaves* crowded, oblong-linear, mucronate, glabrous. *Flowers* in axillary clusters. *Calyx-segments* scarcely mucronate.

(Chili); N. Patagon.

12. HERNIARIA L.

Flowers hermaphrodite or unisexual. *Calyx-tube* short, turbinate. *Style* very short, more or less deeply 2-parted. *Fruit* enclosed in the perianth-leaves.

Annuals or perennials, spreading-decumbent, branched herbs, with small, *sessile leaves*, and small, dry *stipules*, and small, green *flowers* in dense, axillary *clusters*, sessile or pediceled.

Species 15, in Mediterr. countries and Canaries.

HERNIARIA HIRSUTA L.

Prostrate, hirsute herb; *leaves* ovate-oblong; *glomerules* sessile, few-flowered.

(Europe); N. Patagon., by Rio Negro near Carmen.

13. ACANTHONYCHIA Rohrb. (*Pentacæna* Bartl.)

Small, cespitose, much branching herbs, with alternate, crowded, subulate-setaceous leaves, having large, acuminate, silvery stipules and inconspicuous sessile flowers. Calyx-segments ending in stout, rigid spines, or 2 of them smaller. Stamens 3–5, the filaments broad at base, with minute staminodes. Stigmas 2, sessile.

Species few, Chili to Mexico, and 1 in California.

A. RAMOSISSIMA Rohrb. (Weinm.) incl. *A. polycnemoides* (Rohrb.).

Stem diffuse, branching. Leaves crowded, terete, glabrous, their apex pungent. Flowers axillary, few. Fruit 1-seeded.

(Argent.); Patagon.; "on dry spots from Bahia Blanca to N. Patagon. and the foot of the Cordilleras. *Acne* of the Indians. Its infusion is used as a stomachic." J. Ball. By Golfo de San Jorge; Rio Gallegos; R. Sta. Cruz.

14. PHILIPPIELLA Speg.

Leaves glabrous, opposite, stipulate. Flowers apical, sessile, all alike. Calyx 4-cleft; the sepals decussate, imbricate. Staminodes 4, scale-like, opposite the sepals. Fertile stamens 4, alternate with the sepals. Ovary 1-celled, 1-ovuled. Fruit utriculariform, dehiscing irregularly. Seed suborbicular, compressed. Embryo annular.

Species only 1, viz.:

P. PATAGONICA Speg.

Botryose-ramulose, densely pulvinate. Leaves sessile, ovate-obtuse, fleshy, imbricating, 4-ranked. Stipules ovate, connate, obtuse, large. Flowers terminal on branches, bractless, green, glabrous. Stamens included, white. Style 2-lobed. Calyx persistent, not accrescent.

S. Patagon., by mouth of Rio Gallegos, and by Lago Argentino.

This plant when fresh is green and scentless; when dry it emits a strong scent like that of Valerian. (Speg.)

Family 38. Ceratophyllaceæ. Hornwort Family.

Submerged herbs, with long, leafy branches, having whorled, finely dissected *leaves* with filiform segments, and monœcious *flowers*, solitary, sessile in the axils. *Perianth* single, many-parted. *Stamens* numerous, subsessile, extrorse, the connective prolonged. *Ovary* 1-celled, 1-seeded. *Style* 1, filiform.

The fertile and the sterile flowers are generally at different nodes, or at opposite sides of the same node.

One genus and 4 species, cosmopolitan, but not in arctic or antarctic regions.

CERATOPHYLLUM Linn.

Leaves spinulose-serrulate, forked. *Male flowers* with 10–20 stamens, anthers as long as the perianth. *Fruit* slightly exceeding the perianth, tipped by the persistent style.

C. australe Griseb.

Lower *leaf-segments* narrow-linear, entire; upper linear-capillary, serrulate. *Achenes* shortly pedicelled, ellipsoid, tuberculate, narrowly repand-marginate, naked at the base. *Style* persisting, at length elongate. *Leaves* 3–4 cm. long.

N. Patagon., Rio Negro.

Family 39. Ranunculaceæ. Crowfoot Family.

Herbs, rarely climbing shrubs, with exstipulate leaves, alternate (except in *Clematis*), and regular or zygomorphous, complete, or sometimes apetalous flowers. Sepals 3–15, not united (in apetalous species mostly petaloid). Petals mostly as many, not united. Stamens numerous, they and the perianth-leaves all distinct and hypogynous. Carpels numerous, rarely 1 or few, nearly always distinct. Fruit having achenes or follicles. Embryo minute in large endosperm.

Species exceeding 1,000, most in Europe and N. Amer.; fewer in the tropics. All in the Patagonian Flora have regular flowers.

KEY TO THE GENERA.

A. Perianth single, its leaves petaloid.
  b. Fruit consisting of several follicles, each several-seeded. 1. *Caltha*, p. 399.
  b2. Fruit consisting of many 1-seeded achenes.
    c. Leaves alternate, but a 3-leaved involucre on the scape. 2. *Anemone*, p. 400.
    c2. Leaves opposite, and with no involucre. 3. *Clematis*, p. 401.
A2. Perianth usually double; its petals with a nectariferous pit below.
  b. Hermaphrodite.
    c. Minute annuals with linear leaves, and spurred sepals. Achenes in a spike. Scapes 1-flowered. 4. *Myosurus*, p. 402.
    c2. Stouter herbs, with spurless sepals, and mostly cymose flowers. Achenes in a head.
      d. Fruit with soft pericarp. 5. *Oxygraphis*, p. 403.
      d2. Fruit with firm or hard pericarp. 6. *Ranunculus*, p. 404.
  b2. Dicœcious. 1-flowered male-scapes, and 2-flowered female-scapes. Achenes in a head. 7. *Hamadryas*, p. 413.

1. CALTHA Linn. Marsh-marigold.

Leaves entire or crenate, mostly cordate. *Sepals* large, petaloid. *Petals* none. *Follicles* several or few, not united, with ovules on the ventral *suture*.

Species 10, in cold and temperate climates.

KEY TO THE SPECIES.

A. Leaves trifid, the intermediate division 2-lobed. *appendiculata.*
A2. Leaves entire.
  b. Leaf-margins ciliate. *dioneæfolia.*
  b2. Leaves ovate-sagittate. *sagittata.*

1. C. APPENDICULATA Pers. (DC. sub *Psychrophila*).

Cespitose, dioecious. *Sepals* 5, with a long, apical appendage, marcescent. *Scape* 1-flowered, very short, naked. *Leaves* radical, succulent, trifid, cuneiform. *Stamens* few. *Follicles* 5–9.

S. Patagon.; Magellan; Fuegia; alpine.

2. C. DIONEÆFOLIA Hook. f.

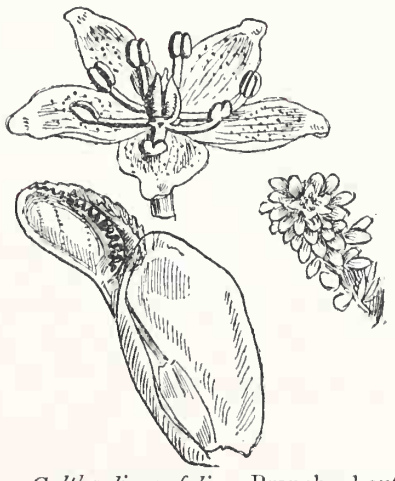
Leaves resembling in shape those of *Dionæa muscipula*.

Stamens 5–7. *Follicles* only 2–3.

"In green bosses upon which the stellate flowers have a very pretty appearance" (Fig. 66).

Common in South parts of Fuegia, and E. and W. Magellan; S. Staaten I.

FIG. 66.



Caltha dioneæfolia. Branch, about natural size; also magnified leaf and magnified flower. (After *Flora antarctica*.)

3. Caltha sagittata Cav.

Rhizome creeping. *Leaves* long-petioled, fleshy, sagittate, auriculate, inflexed upwards. *Sepals* 6–10, exceeding the 10 *stamens*. *Follicles* 25. (Allied to *C. palustris* L.).

(Chili); W. Patagon.; Magellan; over all Fuegia to Cape Horn; Falklands; by Rio Sta. Cruz to Lago Argentino. These are of a *latifoliar* form, having flowers on long, thick scapes, and suborbicular leaves. (Speg.)

2. ANEMONE Linn.

Erect, with an *involucre* of leaves on the stem, near to, or remote from the flower or flowers. *Petals* none. *Sepals* 4–20, petaloid. *Achenes* capitate.

Species 75, in temperate and cold climates.

Key to the Species.

A. Ovary glabrous.	
b. Involucre having 2–3 lobed or toothed leaves. (Chili.)	*antucensis.*
b2. Involucre having 3, much-divided leaves.	*hepaticæfolia.*
A2. Ovary very pubescent.	
b. Sepals 5; flowers 2–4.	*lanigera.*
b2. Sepals 5–8; flowers solitary, or 2–3.	
c. Radical leaves 3–5 partite; the lobes linear or cuneate.	*decapetala.*
c2. Radical leaves multipartite, with narrow lobes.	*multifida.*
b3. Sepals 10–12, leaves triternately divided.	*triternata.*

1. A. decapetala Audouin.

Hairy or somewhat silky, 20–45 cm. high. *Root* tuberous. *Leaves* 3–5-partite; their segments linear or cuneate, incised or multifid. *Pedicels* 1–3, one naked, the others involucellate. *Sepals* 5–10. *Receptacle* globose, at length cylindraceous. *Achenes* woolly, with lateral, filiform style (Fig. 67).

(From the Arctic Circle by the E. U. S. and by the Rocky Mts. to Peru, Chile, Brazil, Argentina); Patagon., on pampas by Coy Inlet. (O. A. Peterson; by Rio Negro, near Carmen de Patagones. "In flower, Nov. 13, 1896, 'yellowish white.' Stems about 20 cm. high, and petioles somewhat woolly.")

A. decapetala patagonica O. Ktze.

Scape and *petioles* hirsute, with long, spreading hairs.

Chubut, and S. Patagon.

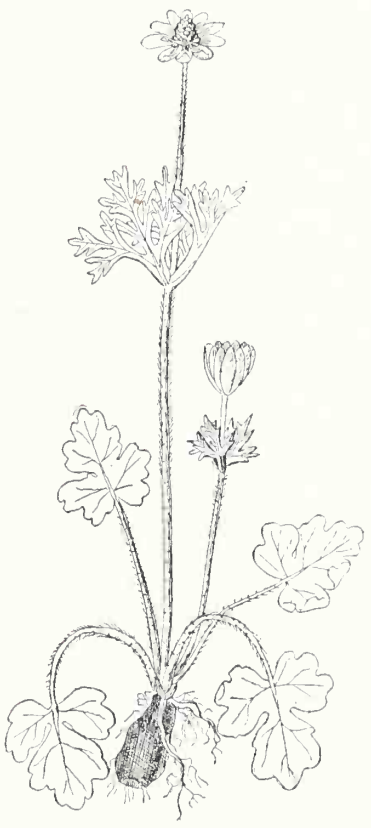
2. ANEMONE MULTIFIDA Poir. (Plate XXII.)

Radical *leaves* long-petioled, to 12 cm., reniform, 3–5-parted, the segments cut into narrow, acute lobes. *Fruit-head* woolly, cream-colored. *Styles* subulate. (= "*A. decapetala patagonica* O. Ktze.," fide Speg.)

Other parts are as *A. decapetala* in which J. D. Hooker included it. Our Patagonian specimens give *A. multifida* much taller (45 cm.), with longer petioles; and more silky except the petioles; root woody.

(Arctic Amer. and Rocky Mts.) Magellan; Fuegia, Uṣhuaia; S. Patagon., by Rio Sta. Cruz; (in fruit, Dec., J. B. Hatcher); Rio Ayley (Nov. 12, B. Brown); W. Patagon. by Rio Aysen (Dusén).

FIG. 67.



Anemone decapetala. Reduced to half-scale. (After Hooker and Arnott.)

3. A. (?) MYRIOPHYLLA Speg.

Proteranthous, glabrous; radical *leaves* unknown. *Scape* thick, erect, 1-flowered; on its middle are 2 alternate, approximate, involucrate leaves, rather large, repeatedly trichotomous, having innumerable, small, fleshy, oblanceolate lobules. *Sepals* oblanceolate, mid-sized, glabrous. *Receptacle* obovate, densely papillate, glabrous. *Carpels* numerous, rather large, tetragonally winged, glabrous, with a short obtuse *style*. (The specimens were all in fruit.)

Patagonia, in rocky mountains near Lago Traful.

4. A. TRITERNATA Vahl.

Leaves triternately divided on a branching petiole, the segments tridentate; *involucral leaves* sessile, cut into setaceous lobes. *Sepals* 10–12, oblong, obtuse. *Root* and habit of *A. decapetala*. *Fruit* woolly, in an oblong head.

(Argentina); Patagon. (?).

3. CLEMATIS Linn.

Suffruticose *climbers*, with opposite, slender-petioled, pinnate leaves, occasionally only lobed or entire. *Sepals* 4–5, valvate in the bud, petaloid.

Petals none. Stamens numerous. *Achenes* 1-seeded. *Styles* long, often plumose.

Species 100, chiefly in temperate climates.

C. VIRGINIANA Linn. (including *C. dioica* Linn.).

Flowers paniculate, dioecious. *Leaves* ternately divided, their segments subglabrous, ovate, subcordate, acuminate, 3-nerved, entire. Pericarps oval. *Pedicels* pubescent.

(Jamaica, medicinal.)

C. VIRGINIANA CAMPESTRIS (S. Hil.)

Cauline leaves flammuliform or bifoliate, or the upper simple: leaflets narrower-ovate to lanceolate, or narrower, mostly entire.

(S. Brazil to N. Patagon.) Common in shrubberies by Rio Negro, near Carmen, the form *angustissima* in Patagonia.

4. MYOSURUS Linn. Mousetail.

Diminutive, with fibrous root; basal, linear, entire *leaves*; and 1-flowered *scapes*. *Sepals* 5 (–6–7)-spurred at the base. *Petals* as many or none, greenish-yellow, narrow, with a nectary above the claw. *Stamens* 5–25. *Achenes* numerous, their receptacle elongate in fruit.

Species 5, Eurasia, western Amer.; Australia.

1. M. ARISTATUS Benth. (*M. apetala* Gay.)

With or without *petals*. *Fruit-head* at length long. *Achenes* carinate, beaked with a diverging, persistent *style*, nearly as long.

(W. United States to Chili and N. Zeal.) S. Patagon., pampas near Coy Inlet. By mouth of Rio Chubut (Dusén); by Rio Gallegos (Nordenskj.). In N. and E. Fuegia. "Is often petaliferous and occurs in N. Amer." A. Gray.

M. ARISTATUS BRACHYPUS (Speg.).

Leaves as long as the scape, or longer, numerous (10–20), broader and more acute than in *M. gracilis*. *Sepals* often 5; petals none. Stamens 5, all fertile.

Patagonia, in meadows by Golfo de San Jorge. Leaves 20 mm. long by 0.5 to 1.5 mm. broad.

2. MYOSURUS GRACILIS (Speg., var. of *M. aristatus*) Macl.
Plate XXI, M.

Diminutive and slender, 5–15 mm. high, with slender root, stem produced into 3–10 long, subsimple branches. Leaves few (4–8), the cotyledons persisting, all linear-oblong or spatulate, attenuate downwards, entire, obtuse, obscurely 1–3-nerved, glabrous, 5–20 mm. long by 0.5 mm. broad. Scape-like branches 1–3, erect, straight, exceeding the leaves, slender, glabrous and scarcely thickened above. Flowers small, ochroleucous. Sepals 3, green, linear-spatulate, erect, obtuse, 1-nerved, glabrous, spur two thirds as long. Petals 5, white, spatulate, attenuate downward, obtuse, 1-nerved, with 2 narrower staminodes. Stamens 3–5, two of them being sterile and petaloid, filaments as long as the petals.

Spike of achenes oblong, obtuse, less than 4 mm. long and two thirds mm. thick. Carpels rhombic-ovate on the back, tipped with a short, blunt, erect style, the pericarp very thin on the back, except a stout, opaque median line or ridge and a similar margin, the interveining part transparent and in maturity, showing the rather large seed, easily rupturing. Seed oval, sinuately rugulose.

Patagonia, by Rio Sta. Cruz and San Julian, near shrubberies. By Hatcher at Coy Inlet (showing the hypocotyl elongated above the roots). "Would make a new species," Spegazzini. Prof. Edward L. Greene, to whom we are indebted for the description of the fruit-head, states that "it is not at all nearly related to *M. aristatus;* it is a particularly well marked new species."

3. M. PATAGONICUS Speg.

Robust, cespitose. Leaves linear, peduncles thickened upwards. Sepals 5, with spur half their length. Petals none. Stamens 10. Carpels ventrally with capitate hairs. Fruiting spike elongated. Stylar mucro rather short.

Patagon.; in marshes by Golfo de San Jorge, and at La Plata Botanic Garden in soil from Rio Sta. Cruz.

5. OXYGRAPHIS Bunge.

Differing from *Myosurus* by having *seeds* erect, *petals* with a small basal nectary but spurless; from *Ranunculus* by having the achenes without a hard pericarp. *Sepals* mostly 5; and *petals* 5–12.

Species 9, Central Asia and N. Amer., and the following.

OXYGRAPHIS CYMBALARIA (Pursh, sub *Ranunculus*) Prantl.

Glabrous, scapose, spreading by long rooting *runners*. *Leaves* long-petioled, clustered at the nodes, round-cordate to reniform, crenate, fleshy. *Scapes* 1–7-flowered. (Fig. in Brit. & Br. ii, 86.)

(N. Amer.); Patagon., wet places near Rio Gallegos, Rio Chico, and Carmen de Patagones.

6. RANUNCULUS Linn. Crowfoot, Buttercup.

Herbs, with simple or variously divided, alternate leaves, and yellow or rarely white, regular flowers. Sepals mostly 5. Petals 5 or more with a pit or nectary at the base. Stamens numerous. Carpels numerous, not united, 1-ovuled. Achenes in a head or spike, each tipped by its style.

Species 200, in temperate and cold regions; also in Himalaya, and by Abyssinia to Madagascar and Mauritius; in Peru and Chili; thence to Patagon., and the Falklands.

KEY TO THE SPECIES.

A. Corolla white. Leaves floating or dissected. Petals 5–8.
  b. Upper leaves semiorbicular, lobed or wanting. Lower leaves filiformly dissected. Aquatics. *aquatilis*.
  *b*2. Leaves all semiorbicular, lobed. *biternatus*.
  *b*3. Leaves all submerged, capillary multifid. *fluitans*.
*A*2. Corolla white, but with yellow claws. Leaves reniform. Creeping scions. *hederaceus*.
*A*3. Corolla white to flesh-colored. Leaves 5-lobed, basally auricled. Cauline leaves narrow. Achenes smooth. *apiifolius*.
*A*4. Corolla yellow.
  b. Nectary abortive or foveolate. Leaves glabrous.
    c. Creeping. Flowers opposite to the tripartite leaves.
      d. Lateral leaf-segments orbicular, dentate; mid-segment bifid. *litoralis*.
      *d*2. Leaf-segments cuneate, 2–3-lobed; the lobes narrow, dentate. *montteanus*.
    *c*2. Creeping or ascending. Flowers axillary. Leaves entire or 3-parted.
      d. Sepals 3; petals 3. Leaves obovate-cuneate, apically 3-toothed. *trullifolius*.
      *d*2. Sepals 3; petals 5. Leaves linear, or broader, equally 3-lobed. *cæspitosus*.
      *d*3. Sepals deciduous; petals 5. Radical leaves orbicular, trisect and again trifid. *alboffii*.
      *d*4. Sepals reflexed; petals 4–6. Fleshy plant. *crassipes*.
      *d*5. Sepals and petals 5.
        e. Achenes numerous. Plant small. *minutus*.
        *e*2. Ripe achenes 15–18, turgid. Leaves cuneate, apically tridentate. *monanthos*.

b2. Nectary with a scale.
c. Leaves entire or dentate, smooth.
d. Flowers opposite the leaves.
e. Leaves orbicular, basi-cordate. *flagelliformis.*
e2. Leaves ovate, or lance-ovate (in Argentina). *bonariensis.*
e3. Leaves small, ovate, tridentate. *obtusatus.*
d2. Flowers axillary. Petals 7 or more.
e. Sepals 3. *uniflorus.*
e2. Sepals 5. Leaves fasciculate at the nodes, thick, ovate-elliptical. *bovei.*
c2. Leaves ternately parted, the divisions mostly stalked and pinnatifid. Sepals reflexed. Bulb. *bulbosus.*
c3. Leaves reniform to round-cordate, the upper 3-parted. Fruit-head rough with curved beaks. *muricatus.*
c4. Leaves all radical, subpeltate or obovate. Achenes 3–5, only 1 maturing, hooked. *oligocarpus.*
c5. Leaves palmately divided, hairy. Ovaries smooth.
d. Ovaries with 3 dorsal nerves.
e. Sepals 3; petals 8–10. *chilensis.*
e2. Sepals 3; petals 3 or none. *minutiflorus.*
e3. Sepals 5.
f. Petals 5, slightly exceeding the sepals. *valdivianus.*
f2. Petals 10–15, twice as long as the sepals. Radical leaves trifid, and again trilobate. Pedicels elongated. *peduncularis.*
d2. Ovaries with only 1 dorsal nerve. *savatieri.*
A5. Aquatics.
b. Leaves floating and submerged, not dissected. Peduncles long, emerging. *fuegianus.*
b2. Leaves floating, entire, in fascicles of 2 or 3. Flowers axillary, yellow, small. *hydrophilus.*
b3. Stout with rooting flagella, having long-stalked, subpeltate leaves and solitary flowers. *potamogetonoides.*
A6. Nearly stemless.
b. Leaves erect, long-petioled, reniform-rotundate, 3-lobed and toothed. Sepals villous. *maclovianus.*
b2. Radical leaves stellately spreading, round-reniform, cleft, covered with yellow silk. *sericocephalus.*
A7. Radical leaves long-petiolate, 3-cleft, and the segments 3–5-lobed; the lobes gland-tipped. *glanduliferus.*
A8. Erect. Radical leaves 3-lobed; the segments 3-cleft, etc. Stem simple, 1-flowered and naked, or 2-flowered with bracts. *patagonicus.*

1. Ranunculus alboffii Macl. (Alboff *sine nomine*).

Rhizome fibrilliferous. *Stem* erect, 30 cm. high, its apex blackish, forking, 2-flowered. *Leaves* pubescent; the radical leaves long-petioled,

orbicular, trisect, their segments obovate-cuneate, trifid, the terminal subsegment trisect, between a bisect pair; cauline leaf solitary in the fork, 3-partite. *Sepals* deciduous, reflex, yellowish. *Petals* 5, golden, obovate, unguiculate. *Achenes* in a globular head, glabrous, with short hooked styles.

Fuegia, above Ushuaia at 300–400 m. elevation. (Alboff.)

2. RANUNCULUS APIIFOLIUS Pers.

Stems erect, glabrous, fistulous, green, branching. *Leaves* radical and cauline, petiolate, glabrous, shining; lower leaves 5-lobed, the lobes sinuate-serrate; the petioles basally auricled-sheathing; upper leaves sublinear. *Peduncles* axillary, involucrate by 2 opposite, sessile, linear-lanceolate bracts, 3 in each involucre, the mid one larger and 1-flowered; the side ones 2-bracted. *Flowers* white to flesh-colored. *Stamens* numerous, filaments white, anthers yellow. *Achenes* obovate, smooth, easily deciduous.

Patagon., "in swamps through the whole republic."

3. R. AQUATILIS Linn. Common Water-Crowfoot.

Leaves of two kinds, some floating and flat, 3-lobed or 3-parted (sometimes wanting), others immersed and multifid with capillary divisions. *Petals* white, nectary without a scale. *Achenes* transversely rugose.

(Temperate Eurasia, Australia); Patagon., Chubut, in subandine pools.

R. AQUATILIS CÆSPITOSUS DC.

Leaves petiolate, all emersed, their outline suborbiculate, cut into divergent segments. *Pedicel* scarcely exceeding the petioles. *Achenes* obovate, rugose.

S. Patagon., in wet places near Rio Sta. Cruz, and at Orr-aike, near Lago Viedma.

R. AQUATILIS CAPILLACEUS DC.

Leaves petiolate, all immersed, divided into filiform segments.

Chubut, in slowly flowing waters near Carren-leofú.

4. R. BITERNATUS Smith.

Small herb, with many slender *stems* from a fibrous root, creeping and glabrous. *Leaves* biternately dissected, the lobes oblong, acute, entire or

toothed. *Flowers* solitary, the petals white, oblong, sometimes long-clawed, equalling the sepals. *Head* of achenes smooth, globular, rather large, at length ruddy.

E. and W. Magellan, Fuegia, Navarino I., Falklands.

R. biternatus exiguus is a small state, common in the Falklands.

5. Ranunculus bovei Speg.

(Of sec. *Ranunculastrum*, having achene with 1 dorsal nerve, floral axis long, nectary with free scale, root fleshy.)

Glabrous. *Stems* stoloniferous, thickish. *Leaves* at the nodes 3–5-fasciculate, their petiole very long, erect, their limb thick, ovate or elliptical, base rounded, apex rounded or obtusely pointed. *Flower* solitary on an erect scape, as long as the petioles. *Sepals* 5, ovate. *Petals* many, narrow, obovate, as long as the sepals. *Achenes* obovate, obscurely tetragonal. *Style* short, lateral. Handsome.

Punta Arenas. S. Patagon., Gallegos Valley (Nordenskj.); N. and E. Fuegia (Dusén).

6. R. bulbosus Linn. Bulbous Crowfoot.

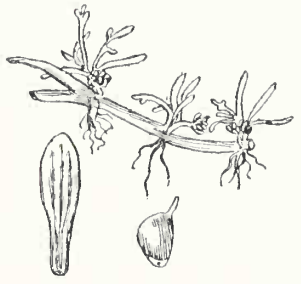
Perennial, with bulbous *root*, upright, many-flowered *stem*, *leaves* divided into 3 stalked leaflets, which are again 3-parted and lobed. *Peduncles* furrowed, *sepals* reflexed, and glabrous *achenes* in a globose head.

(Eur. and U. S.); common in grassy places by Rio Negro. N. Patagon.

7. R. cæspitosus Dusén.

Cespitose, glabrous, creeping. *Stem* thick, rooting at the nodes, fasciculately leafy, 1-flowered. *Leaves* long petioled, or linear, entire, or cuneiform-dilated towards the apex, 3-lobed. *Flowers* small, yellow, sessile or nearly so. *Sepals* 3, broad, fugacious. *Petals* twice as long, 5, with saccate nectary. *Stamens* rather few. *Achenes* 20–30, in a globose head. *Style* nearly as long as the achene (Fig. 68).

Fig. 68.



Ranunculus cæspitosus. Natural size; also enlarged petal and carpel. (After Dusén.)

S. Fuegia, in swamps near Rio Azopardo.

8. RANUNCULUS CHILENSIS DC.

Procumbent *stems* and petioles hispid. *Leaves* subvillous, cordate-orbicular, 3–5-cleft, the lobes coarsely toothed; the upper leaves smaller. *Flowers* small, 6–8 mm. diam., sometimes larger. *Calyx* very villous. *Achenes* orbicular-compressed, smooth-margined.

Cape Tres Montes, and Chonos Archip.; Rio Sta. Cruz (C. Darwin); Ushuaia (Hahn); Magellan (Hatcher).

9. R. CRASSIPES Hook. f.

Glabrous, fleshy, with creeping *stem*. *Leaves* long-petiolate, cordate-reniform, trifid or tripartite, with the segments 3–5-crenate. *Peduncles* shorter than the petioles. *Sepals* at length reflexed. *Petals* 4–6, obovate-spatulate, yellow. *Achenes* turgid; styles straight.

Allied to *R. biternatus*. In Kerguelen I., in moist places. A specimen in the Gray Herbarium, collected by R. O. Cunningham at Punta Arenas, Magellan, is intermediate between the two species.

10. R. FLAGELLIFORMIS Smith.

Flowers yellow; *leaves* undivided, long-petiolate, orbiculate-cordate, entire, glabrous. *Stem* repent; pedicels oppositifoliose. *Carpels* small, ovate, muticous, smooth or subpunctulate.

(Chili and New Granada); N. Patagon., abundant in flooded places near Carmen de Patagones.

10. R. FLUITANS Lam. River-Crowfoot.

(*Batrachium.*) *Flowers* small, white, without a scale at the base of the petals. *Leaves* all submersed, capillaceo-multifid, their segments long and parallel. *Petals* ovate, exceeding the sepals. *Achenes* transversely wrinkled.

(Eur.)

R. FLUITANS MINOR Gelert.

E. Fuegia (Br. Ansorge).

11. R. FUEGIANUS Speg.

Glabrous. *Stems* diffuse, floating, leaves uniform, the submersed not dissected. The lower *leaves* discoid or ovate in contour, basicordate,

deeply 3–5-cleft, their lobes obtusely 3–5-lobed and incised; upper trifid lobes spatulate, entire or toothed. *Petiole* thick, long. *Peduncles* long, emerging from the water, 1–3-flowered. *Flowers* small. *Sepals* broad, ovate, glabrous.

S. Patagon., Magellan; E. & S. Fuegia. (Robust form, with rather long petals, by Rio Chico, etc.)

(*R. fueginus* Phil. Small, silky, with 3-partite leaves, the lateral lobules bifid and toothed; the mid-lobule 3-toothed. Fruit globular. Fuegia. "Classification doubtful." C. Reiche.)

12. Ranunculus glanduliferus Poeppig.

Little branching, and sparingly hirtellous. *Radical leaves* long-petiolate, rounded, subcordate, or truncate or cuneate at the base; 3-cleft beyond the middle, the segments with 3–5 linear lobes, gland-tipped. *Cauline leaves* few, with narrow segments. *Peduncle* long, with red appressed hairs, especially above. *Sepals* 5, subpetaloid-yellowish, pilose externally, ovate. *Petals* twice as long, narrower, nervose. *Achenes* ovate, glabrous; *style* nearly as long.

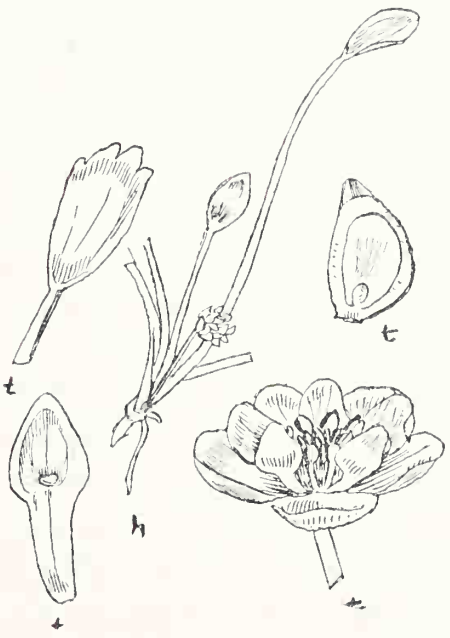
(S. Chili.) Patagon., in grassy plains near Pozo-huapi. (Speg.)

13. R. hederaceus Linn.

Glabrous, with long creeping *scions*, rooting at the nodes in moist places. *Leaves* reniform, 3–5-lobed, on petioles 1–10 cm. long. *Pedicels* solitary, 1-flowered; the *petals* white, with yellow claws. *Stamens* 5–10. *Style* short, thick.

Magellan, Port Gregory. (Safford.)

Fig. 69.



Ranunculus hydrophilus (*h*); and enlarged leaf, petal, flower, and section of fruit of *R. trullifolius* (*t*). (After *Flora antarctica*.)

14. R. hydrophilus Gaud.

Glabrous. *Stem* slender, creeping. *Leaves* long-petioled, swimming, elliptic-ovate, entire, 3–5-nerved; in fascicles of 2–3, sheathing at the base. *Peduncles* axillary, solitary, shorter than the petioles. *Flowers* small;

the *petals* yellow, spatulate. *Achenes* few; *styles* very short. (Fig. 69, central figure, *h.*)

(Leaves like floating leaves of *Potamogeton heterophyllus.*)

S. Fuegia (Dusén); Punta Arenas (R. O. Cunningham); Falklands in fresh water.

15. Ranunculus maclovianus d'Urv.

Nearly *stemless*, appressed-pilose, the radical *leaves* long-petiolate, erect, reniform-rotundate, trifid or trilobate, the segments coarsely and acutely toothed; *peduncles* shorter than the leaves, rising from young branchlets. *Sepals* villous. *Petals* spatulate, longer than the sepals, yellow. *Achenial* head globose, rather glabrous; *styles* short, hooked.

Falklands, abundant in moist places.

16. R. montteanus Phil.

Glabrous. *Stem* creeping. Leaves long-petioled, 3-partite, the segments trifid; the subsegments incised mostly into linear pieces. *Peduncles* solitary, axillary, equalling the petioles. *Sepals* 5, ovate-oblong. *Petals* equalling them, oblong, yellow. *Achenes* inflated, in a globose head, smooth; *styles* as long as their achenes, incurved.

Chonos Archip.

17. R. muricatus Linn. Spiny-fruited Crowfoot.

Subglabrous, branched, 30–60 cm. high. *Lower leaves* reniform to round-cordate, on broad petioles, lobed, or crenate; *upper* 3-parted, cuneate, subsessile. *Flowers* yellow; *petals* exceeding sepals. *Fruit-head* globular, *achenes* compressed, with curved *beak.*

(Old World; naturalized in Amer.); N. Patagon., in fields near Carmen.

18. R. oligocarpus Speg.

(*Hecatonia.*) Glabrous; *root* densely hairy. *Leaves* all radical and subpeltate; petioles very long, limbs suborbicular or obovate, obtuse, entire or 3-crenate, rather fleshy. Scapes erect, half as long as the petioles, sheathed and 1-leaved at apex, with 1–2, 1-flowered pedicels. *Flowers* small, yellow, *sepals* ovate, *petals* linear; *stamens* numerous; *carpels* 3–5, only 1 maturing, with hooked *style.*

Chubut, wet places along Rio Carren-leofú. Like *R. trullifolius*, but

distinguished by the subpeltate leaves (as *R. potamogetonoides* Speg. and *R. bonariensis* Poir.)

19. RANUNCULUS PATAGONICUS Smith.

Appressed-pilose. *Stem* erect, simple, 1-flowered, naked; or 2-flowered and then involucrate. *Leaves* radical, 3-lobed, their segments cuneate, 3-cleft, incised. Involucre 1-leaved, 3-cleft. *Petals* 10–12, exceeding the spreading sepals. *Achenes* glabrous. Style hooked.

Chili. Patagonia (?).

20. R. PEDUNCULARIS Smith.

Leaves subglabrous, radical, long-petiolate, 3-partite; their segments 3-lobate, apically acute and incised, the subsegments narrow. *Cauline leaves* 1–2, linear or trifid. *Stem* erect, bearing 1 leaf and 1–2 flowers. *Sepals* ultimately reflexed. *Petals* 8–10, oblong, clear yellow. *Achenes* globose, smooth; *styles* hooked.

(Chili, on the Pacific slope); Cabo Negro, Magellan, by Hatcher at Punta Arenas, E. and S. Fuegia (Dusén), "stems with sparse appressed pilescence"; Chubut, near Rio de Mayo.

R. PEDUNCULARIS ALBOFFIANUS Speg.

Tall specimens with *bracted* 2–3-flowered *scapes*, mostly appressed-setulose.

S. Patagon. in grassy places at Orr-aike, near Lago Viedma.

R. PEDUNCULARIS MINOR Weddell. Appressed-pilose, 5 cm. high. *Peduncle* basal, 1-flowered. Punta Arenas. (Hahn.)

R. PEDUNCULARIS PATAGONICUS Poepp. (*R. patagonicus* Poepp. non Smith.)

Stem erect, appressed-pilose, simple, naked, 1-flowered, or involucrate and 2-flowered. *Leaves* radical, 3-lobed; their segments cuneate, trifid, incised. *Involucre* 1-leaved, trifid. *Petals* 10–12, exceeding the spreading sepals. *Carpels* glabrous. *Styles* uncinate.

(Chili); Magellan. (Dusén.)

R. PEDUNCULARIS POLYPETALUS.

Lower, 1-flowered. *Leaves* nearly pinnate; scape 1-leaved.

21. RANUNCULUS POTAMOGETONOIDES Speg.

Stout, glabrous, flagelliferous, the flagella rooting, their apex fasciculate-leafy; the *leaves* long-petiolate, entire, subpeltate, orbicular-ovate, obtuse, the base rounded-subcordate, narrowly peltate-marginate. *Flowers* solitary, peduncles shorter than the leaves. *Achenes* in a globose head, numerous, elliptico-obovate, longitudinally striate.

Rio Sta. Cruz, in flowing water at Orr-aike.

22. R. SAVATIERI Franch.

Stiffly pilose. *Stems* 60–90 cm. long, prostrate, bearing at the nodes a fascicle of leaves or branchlets. *Leaves* long-petioled, reniform-cordate, trisect, the segments obovate-cuneiform, 3–5-lobed. *Peduncles* 25 mm. long, slender, from the nodes. *Flowers* scarcely 4 mm. diameter: *sepals* broad-ovate; *petals* as long, narrow. *Achenes* 1.5 mm., dorsally subacute, ovate-rounded; *style* infra-apical, slightly incurved.

Patagon., at Punta Arenas.

23. R. SERICOCEPHALUS Hook. f.

Depressed, stemless; densely covered by yellow, silky *hairs*. *Leaves* radical, stellately spreading, round-reniform, irregularly 3–7-cleft, their lobes coarsely crenate-toothed. *Peduncles* very short; *flowers* small, inconspicuous. *Petals* narrow, spatulate, yellow. *Achenes* silky; *style* hooked.

Falklands, Fuegia, at Ushuaia; here caulescent and larger.

24. R. TRULLIFOLIUS Hook. f.

Glabrous. *Stem* short, sarmentose. *Leaves* radical, obovate-cuneate, entire, apically 3–5-toothed; *petioles* long, thick, attenuate upwards. *Peduncles* shorter than the petiole. *Flowers* inconspicuous. *Sepals* broad-ovate-rounded. *Petals* shorter. Achenes large (*t-t*, Fig. 69, p. 409).

(Kerguelen); Falklands, in freshwater; Magellan, E. and S. Fuegia; not rare by streams near Punta Arenas.

7. HAMADRYAS Comm.

Diœcious, the scape bearing one male, or two female flowers, with rudiments of suppressed organs. Low herbs from perennial caudex, with

silky *leaves*. *Sepals* 5–6. *Petals* 10–12, with basal scale, showy. *Achenes* numerous, in heads, with short, hooked *styles*.

Species 6, all Neantarctic.

KEY TO THE SPECIES.

A. Leaf solitary, tripinnate, and flower solitary.	*delphinium*.
*A*2. Leaves rounded.	
b. Leaves 5–7-cleft, webby.	*kingii*.
*b*2. Leaves tripartite, or also further divided.	*magellanica*.
*A*3. Leaves subovate or narrower.	
b. Leaves deeply trifid, and again cleft, silvery.	*argentea*.
*b*2. Leaves oblong or subtrifid, webby.	*tomentosa*.
*A*4. Leaves imbricate, appressed, from a broad base, forming a column around the scape and solitary flower. Scions.	*sempervivoides*.

1. HAMADRYAS ARGENTEA Hook. f.

Leaves silvery-woolly, obovate-cuneate, attenuate at the base, deeply trifid, the lobes also 3–5-cleft. *Male plant* smaller than the female.

Falklands; Magellan.

2. H. DELPHINIUM.

Having one *leaf* and one *flower*; *leaf* oblong-tripinnate, tomentose, 10 cm. high. *Sepals* 5, villous. *Petals* 12, narrower.

Magellan.

3. H. KINGII Hook. f.

Leaves rounded, 5–7-cleft, or many-lobed, the lobes crenate; cobwebby on both sides.

S. Patagon.; Magellan.

4. H. MAGELLANICA Lam.

Leaves silky, at length glabrous, rounded, tripartite; the segments cuneate, incise-partite or subentire. *Flowers* spicate. *Calyx-segments* concave, glabrous or villous-tipped. *Petals* linear, mucronate. *Style* of young achenes hooked, at length straight.

Magellan, Fuegia; Staaten. S. Patagon., near Rio Gallegos at 900 m. elevation (Nordenskj.). Cordilleras above Rio Chico (Hatcher).

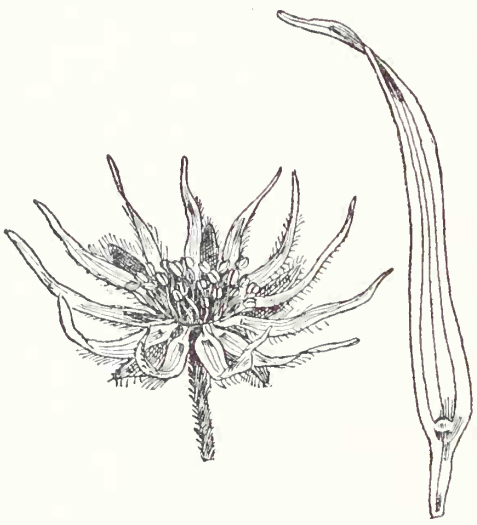
A variety has the leaves silvery-woolly.

5. HAMADRYAS SEMPERVIVOIDES Sprague. (Plate XVI.)

Differs from the other species by rosulate habit and glabrous sepals and petals.

Rootlets fibrous, thick, adventitious. *Stem* simple or bifid, 25–37 mm. long, clothed below by the leaf-bases. *Leaves* sessile, rosulate, sheathing the stem; limb twice trisect, 4–5 mm. long, the mid-segment external, the laciniæ oblong, cuspidate, glabrous; sheath 10–12 mm. long, 7–8 mm. broad, scariose, spongiose upwards, woolly externally. *Scape* concealed by leaves, 16 mm. long, 1-flowered. *Male flowers* unknown. *Female flowers; sepals* 5–6, deltoid-subulate, 3 mm. long, 1–1.5 mm. broad, scariose; *petals* about 7, linear-subulate, 8 mm. long, with a nectariferous callus above the base. *Ovaries* ovate, attenuate above to an uncinate style. *Achenes* posteriorly produced at the base.

FIG. 70.



Hamadryas tomentosa. Staminate flower and one of its petals both magnified. (After *Flora antarctica*.)

S. Patagon., on lava rocks in Cordilleras, J. B. Hatcher, Feb. 1897.

"A most distinct species showing typical adaptation to high mountain conditions." T. A. Sprague, in Hooker's *Icones Plantarum*, vol. viii, part ii, May, 1902. (Plate 2748.)[1]

[1] (This interesting specimen was sent by us to Kew Herbarium, where it was recognized as a new species, and described and published in the *Icones Plantarum*.)

Diagnosis (issued in advance in Hooker's *Icones Plantarum*, plate 2748, May, 1902.)

HAMADRYAS SEMPERVIVOIDES Sprague (sp. nov.); a certeris speciebus differt habitu rosulato, sepalis petalisque glabris.

Radicelli fibrosi, crassi, adventitii. *Caulis* simplex vel bifidus, 1–1.5 poll. longus, subtus foliorum basibus vestitus. *Folia* sessilia, rosulata, caulem vaginantia; lamina bis trisecta, 2–2.5 lin. longa, segmento medio exteriore, laciniis oblongis, cuspidatis, glabris; vagina 5–6 lin. longa, 3.5–4 lin. lata, scariosa, superne spongiosa, extus lanata. *Scapus* foliis occultus, 8 lin. longus, 1-florus. *Flores masculos* non vidi. *Flores feminei:* sepala 5–6 deltoideo-subulata, 1.5 lin. longa, 5–.75 lin. lata, scariosa; petala circa 7, lineari-subulata, 4 lin. longa, supra basin collo nectarifero instructa. *Ovaria* ovata, superne in stylum uncinatum attenuata. Achænia basi postice producta.

6. HAMADRYAS TOMENTOSA DC. (*H. magellanica tomentosa.*)

Erect. *Leaves* oblong or subtrifid, webby-villous on upper surface. *Stems* covered by fibrous threads from old leaves. *Calyx* tomentose. *Capsules* oval, ending in a persistent style, striate. (Fig. 70, p. 414.)

Fuegia, Mts. above Ushuaia; Staaten I; rare.

Family 40. BERBERIDACEÆ. Barberry Family.

Shrubs or herbs with alternate or basal *leaves*, and regular flowers. *Sepals* and *petals* two- to several-seriate. *Stamens* as many as, and opposite to the petals, hypogynous; *anthers* mostly opening by valves. *Pistil* of 1 carpel; *fruit* a berry or capsule.

Species more than 100, most of them in the N. Temperate zone, the Andes, and in temperate S. Amer.

BERBERIS Linn. Barberry.

Shrubs with simple or pinnate *leaves*, often spiny-toothed, or changed into spines. *Sepals* 6–9, petaloid; *petals* and *stamens* usually 6 each, the *anthers* opening by upwardly opening valves. *Ovary* 1-celled. *Fruit* a berry. Species 100.

KEY TO THE SPECIES (including some Chilian forms).

A. Flowers in corymbs or racemes.
- *b.* Stamens appendaged below the anthers. Spines palmately divided.
  - *c.* Lower leaves spiny-toothed. — *congestiflora.*
  - *c2.* Leaves all entire. Racemes. — *rotundifolia.*
  - *c3.* Leaves entire. Umbels. — *umbellata.*

  } (Chilian).
- *b2.* Stamens not appendaged.
  - *c.* Branches (some or all) spineless.
    - *d.* Leaves, some membranous, entire, others coriaceous, spiny-toothed. — *polymorpha* (Chilian).
    - *d2.* Leaves coriaceous.
      - *e.* Leaves lanceolate, dentate. — *pearcei.*
      - *e2.* Leaves obovate, basally attenuate. — *serrato-dentata.*
  - *c2.* Branches with spines.
    - *d.* Leaves, some entire, others spiny-toothed. — *polymorpha.*
    - *d2.* Leaves with bidentate margins. — *bidentata.*

    } (Chilian).
    - *d3.* Leaves spiny-toothed.
      - *e.* Spines short, 5 mm.
        - *f.* Rachis of raceme shorter than the leaves. — *ilicifolia.*
        - *f2.* Rachis longer than the leaves. — *darwinii.*

*e*2. Spines more or less elongated. Leaves slightly toothed. *valdiviana* (Chilian).

*b*3. Flowers large, 5-merous. Spines 3-partite. Leaves oblong, coriaceous. *ruscifolia.*

A.2. Peduncles 1-flowered, solitary, or aggregate.

b. Stamens without appendages below the anther.

c. Leaves oval, or obovate. (*buxifolia*) *microphylla.*

*c*2. Leaves lanceolate or linear-lanceolate. *grisebachii.*

*b*2. Stamens appendaged below the anther.

c. Leaves entire, linear; flowers 1(–2). *empetrifolia.*

*c*2. Leaves, some angular spiny-toothed, others entire. Flowers solitary. *heterophylla.*

*c*3. Leaves cuneate, tridentate. Flowers solitary. *cuneata.*

*b*3. Spineless. Leaves entire, elliptical. Berries ovate. *inermis.*

*b*4. Leaves entire or spiny-toothed, obovate. Berries small. Branching virgate. *virgata.*

*A*3. Flowers? Heterophyllous, with 3–5-partite spines. Upper leaves sessile. Branches slender. *darwinii.*

1. Berberis cuneata DC. Califate.

Low shrub. *Spines* 3-parted, scarcely longer than the leaves. *Leaves* obovate-cuneate, spinosely trifid, smooth. *Pedicels* solitary, 1-flowered, nearly as long as the leaves. *Flowers* as large as in *B. vulgaris*. *Berries* intensely purple, as large as peas, not sweet.

S. Patagon., Porto Deseado; near Coy Inlet. (Hatcher. It is called "califate," grows everywhere, and its wood is invaluable for fuel.)

2. B. darwinii Hook (including *B. morenonis* O. Ktze.).

Young branches rusty-pubescent. *Leaves* rigidly coriaceous, shining, rusty below, cuneate or oval, trifid at apex; their margin spinose-toothed. *Racemes* exceeding the leaves, sometimes long, slender. *Berries* subglobose, not pleasant.

(Chili); Patagon., in mountain shrubberies near Carren-leofú.

3. B. empetrifolia Lam.

Small shrub, with reddish brown pubescent *bark*. *Spines* 3-parted. *Leaves* evergreen, linear, entire, revolute, clustered. *Pedicels* 1–2, from branchlets between the leaves, each 1-flowered. *Stigma* subsessile. *Berry* globose, bluish-black, slightly sour.

Chili, in woods on cordilleras, descending to sea-level at Magellan. A steppe-plant. In N., E. and S. Fuegia. (Dusén.)

4. BERBERIS GRISEBACHII Lechl. (*B. linearifolia* Phil.).

Spines rather short, 3-branched, branches divaricate, equal. *Leaves* linear, margins revolute, apex mucronate; 36 mm. by 5 mm. *Peduncles* 1-flowered, as long as the leaf. *Fruit* ovate, blue, terminated by a long *style*.

(Chili); Patagon.: Magellan.

5. B. HETEROPHYLLA Juss.

Bush, 150 cm. high, with wrinkled *bark*, dark on old, brown on young parts. *Spines* 3-parted. *Leaves* fascicled, sessile, glabrous, oblanceolate, entire, some with 3 pungent teeth. *Pedicels* solitary, 1-flowered, scarcely exceeding the leaves. *Petals* with basal glands, deep yellow-orange. *Filaments* toothed. *Berries* black, with sessile stigma, edible.

Magellan northwards to Rio Negro; not in S. Fuegia. By Hatcher at Coy Inlet. The S. Amer. ostrich (*Rhea darwinii* Gould) is fond of its berries. Native name of the shrub, Gayankhia; of the berries Khalgo; the shrub is also called Califate).

6. B. ILICIFOLIA Forst.

Erect *evergreen* shrub, to 1 m. high, with light-colored bark. *Spines* tripartite. *Leaves* shining, obovate, coarsely spinose-toothed in the upper part. *Peduncles* shorter than the leaves, 4–6-flowered; pedicels long, subcorymbose. *Flowers* rather large, flame-colored, crowded near the top of young shoots. *Berries* ovoid, blue, not edible.

S. W. Patagon.; E. and W. Magellan and through Fuegia to Cape Horn. By Hatcher at Lapataia. Handsome with the moss, *Ulota fulvella* Mitt., on its stem. Its leaves resemble holly-leaves. Fuegian name "Tchelia."

7. B. INERMIS Pers.

Spineless. *Leaves* elliptical, entire, smooth, scarcely mucronulate. *Pedicels* solitary, 1-flowered, exceeding the leaves. *Berries* ovate, crowned by the stigma.

Magellan.

8. B. MICROPHYLLA Forst., 1787. (*B. buxifolia* Lam. 1791; *B. dulcis* Sweet, 1831.)

Erect *evergreen* shrub, with stout, 3-partite *spines*, longer than the leaves. *Leaves* oblong-lanceolate or ovate, large in the young plant,

petiolate, pungent, here and there spiny-toothed; in older plants smaller, 12 mm. long, usually entire, acute, at length coriaceous. *Pedicels* 1–3-flowered. *Berry* flat-globose, 4-seeded, blue-black, edible.

It forms dense bushes, with leafage of boxwood. The young leaves often have the cluster-cups of the fungus, *Æcidium magellanicum*.

E. and W. Magellan; Fuegia, nearly everywhere; but rare in the rainy-wood-region. (Dusén.) By Hatcher in the Cordilleras of S. Patagon.; scarcely any of these have the leaves spiny-toothed, except the apical spine. "The berries were used for tarts by the officers of the Beagle, and were found to be excellent, called *Magellan-grapes*." (J. D. Hooker.) Near Lago Nahuel-huapi (leaves larger and thickish).

9. BERBERIS MICROPHYLLA GRACILIS Alboff.

Branches long, slender, pendulous. *Leaves* membranaceous (not coriaceous), ovate-lanceolate, obtuse. *Flowers* mostly in 3's; *peduncle* 1 cm., short.

Fuegia, at Ushuaia.

(*B. morenonis* O. Ktze. is only a young condition of *B. darwinii* Hook., fide Speg.)

10. B. PEARCEI Phil.

Leaves short; petiolate, oblong, coriaceous, spinosely serrate, mucronate, the under surface glaucescent to rufescent, glabrous, reticulate-veiny. *Racemes* 6–10-flowered, scarcely equalling the leaf. *Pedicels* 10–15, slender, smooth. *Style* short, *stigma* peltate. *Fruit* 6–7 mm. by 5 mm. blackish with a glaucescent bloom; *pedicel* 10–15 mm. slender, smooth. (Differs from *B. ilicifolia* by the numerous teeth of the leaves.)

Patagon., Chubut, in subandine woods; Valdivian Andes.

11. B. RUSCIFOLIA Lam.

Shrub 1–2 m. high. *Spines* 3-parted. *Leaves* simple, coriaceous, shining, oblong, tapering at the base, mucronate, entire, or coarsely and spiny few-toothed, 4 cm. long. *Peduncles* short, bearing 4–7 flowers in a terminal *raceme*. *Flowers* large, 15 mm. broad, with 5 *sepals* and 5 *petals*.

(Buenos Aires); Punta Arenas, Hatcher.

12. B. VIRGATA Ruiz & Pav. (Plate XV.)

Erect, much branched shrub. *Spines* small or none. *Leaves* obovate, entire, or spinously toothed towards the apex, smooth.

Peduncle solitary, 1-flowered, as long as the leaves. *Berries* small, oblong-ovoid.

(Peru in woods); by Hatcher in the Cordilleras of S. Patagon., in flower Feb. 17, 1897. "Bush, 60–90 cm., white." In Hatcher's specimens I cannot find the anther valves developed; they are only indicated by a specialization of cells at the place of origin. (Macl.)

Family 41. MAGNOLIACEÆ.

Trees or shrubs with alternate *leaves* and large flowers; the *sepals* and *petals* in cycles. *Stamens* numerous, hypogynous. *Carpels* many, not united, becoming dry or fleshy mericarps. Embryo minute, in non-ruminate endosperm.

Species 70, chiefly in Himalaya, E. Asia, and E. part of N. Amer.

The subfamily *Illicieæ* which contains *Drimys*, has the flowers often polygamous, not 3-merous, the carpels 1-seriate or solitary, and the leaves exstipulate, finely dotted.

DRIMYS Forst. Winter's-bark.

Carpels crowded, baccate, many-seeded. *Staminal* filaments thickened upwards, bearing distinct anther-cells.

A small genus, with species in Australia, New Zealand, New Guinea, Borneo, Mexico, Venezuela, and Chili, to Fuegia.

D. WINTERI Forst.

Tree, with evergreen leaves; *leaves* 7–10 cm. long, oblong or ovate-lanceolate, obtuse, glaucous beneath. *Peduncles* subsimple, *aggregate*, or very short, ending in long *pedicels*. (Fig. 71.)

E. and W. Magellan, in woods near Punta Arenas and westwards. Fuegia, about Lapataia (not at Ushuaia); abounding in the rainwoods; in Navarino, and Staaten I. Native name, "Ouchkouta," for the wood; "Liouch," for the leaves. Its

FIG. 71.

Drimys winteri, Winter's-bark. Flowering branch, reduced; also fruit. (After Prantl.)

English name is after Capt. Winter, who accompanied Sir Francis Drake in his circumnavigation of the globe, 1577–80. Its bark was used as medicine against scurvy, and also as a condiment. A noble tree, with smooth, gray bark, leaves like laurel-leaves, and masses of rather large, white flowers in cymes terminating the branches.

DRIMYS WINTERI CHILENSIS (DC.).

Leaves oblong-obovate, glaucous underneath.
(Chili); S. Patagon., near Ultima Esperanza.

D. WINTERI MAGELLANICA Eichl.

Leaves shorter and broader, half as broad as long.
Magellan.

D. WINTERI MORENONIS O. Ktze.

Leaves very many, oblanceolate. *Peduncles* mostly 1-flowered.
Patagonia.

Family 42. MONIMIACEÆ.

Trees or shrubs with *exstipulate*, mostly opposite pinnately nerved *leaves;* and mostly unisexual *apetalous flowers*, with several-seriate *sepals*, the inner being partly petaloid. *Stamens* numerous, on a disk adnate to the perianth-tube. *Carpels* usually several, in the perianth-cup, or imbedded in a fleshy receptacle, each 1-celled, 1-ovuled. *Fruiting* carpels generally drupaceous. *Embryo* small, in the axis of endosperm.

Species 150, chiefly of the southern tropical and temperate lands; most of the genera in the Orient and Australia; some in Africa, some in Brazil.

LAURELIA Juss.

Trees or shrubs with diœcious or monœcious *flowers*. *Stamens* 6–12, filaments short with an oblong gland on each side, *anther-cells* distinct, opening by uplifted valves. *Female flowers* with staminodes; carpels long-pilose, ending in plumose *styles*. *Ovule* erect.

Species 2, one in New Zealand and the following:

L. SEMPERVIRENS (Ruiz & Pav.) Tul. (*L. aromatica* Poir.)

Scented tree. *Leaves* obovate- to ovate-lanceolate, serrate, petiolate, 5–9 cm. long. *Raceme* silky-pubescent. *Tepals* of female flower distinct, remote, the outer shorter.

(Chili; also cultivated and its leaves used for infusing and as a potherb, and nuts edible); W. Patagon., by Lago Nahuel-haupi. Fig. in Eng. & Prantl, iii, 2, p. 102, A–D.

Family 43. PAPAVERACEÆ. Subfamily *Fumarioideæ*. Fumitory.

Delicate, smooth herbs, with finely dissected *leaves*, and zygomorphous *flowers* in racemes or spikes, or rarely solitary. *Sepals* 2, minute. *Petals* 4, outer pair larger. *Stamens* 6, diadelphous, opposite the outer petals. *Embryo* minute.

FUMARIA Linn.

Fruit rounded, indehiscent, 1-seeded.

Species 15, Old World.

1. F. CAPREOLATA Linn.

Sepals scarcely one fifth as long as the corolla. The globose *fruit* is constricted at the base into a neck. Fruiting *pedicels* recurved, longer than the bract.

Partially climbing, by means of its long twining petioles.

(Eur., W. Asia, and N. Afr.); common about Buenos Aires and southward; in N. Patagon.; "doubtless introduced." (J. Ball.)

2. F. MEDIA Lois.

Sepals one third as long as the corolla. *Fruit* globose, depressed; fruiting *pedicels* erect, twice as long as the bract. *Racemes* rather lax. *Stems* erect. *Leaves* compound above, their petioles subcirrhose. Annual.

(Europe); N. Patagon., in fields near Carmen.

Family 44. CRUCIFERÆ. Mustard Family.

Herbs, with watery pungent sap, alternate leaves, and racemose to corymbose, hypogynous, cruciate flowers, sometimes apetalous. Stamens 6, tetradynamous, or fewer by abortion. Ovary 2-celled, with a thin septum and parietal placentæ. Fruit a silique, or a silicle. Seeds with folded embryo, and no endosperm.

Species 1,500, widely distributed, especially extratropical; non-poisonous. (In collecting secure the ripe fruit.)

KEY TO THE GENERA.

A. Hairs simple or none. No glandular hairs nor glandular tubercles.

*b*1. Style long. Silicle winged, its cells 1-seeded. Leaves pinnatifid. Flowers white. 1. *Menonvillea*, p. 424.

*b*2. Stigma equally developed on the style, capitate. Silicle on a gynophore; its mericarps winged on the margins and mid-nerve, 1-seeded. Septum narrow; radicle lateral on cotyledons. Flowers white. 2. *Hexaptera*, p. 424.

*b*3. Stigma strongly developed above the placentæ; more or less 2-lobed, or depressed in the notched pod.

*c*1. Cotyledons starting below the bend of the embryo. Silicles basally rounded to cordate, its cells 1-seeded, seed pendulous. Lateral and median honey-glands. Stamens sometimes 4 or 2, or more than 6. Radicle usually dorsal.

*d*1. Silicle 2-valved, with lanceolate or elliptic septum. Petals white, rarely yellowish or none. 3. *Lepidium*, p. 425.

*d*2. As *Lepidium*, but stamens 6; cells of silicle communicating by chinks, and leaves minute, imbricating. 4. *Delpinoëlla*, p. 427.

*d*2. Silicle indehiscent, broader than long, didymous, its septum linear. Petals white, rarely purple or none. 5. *Coronopus* (*Senebiera*), p. 427.

*c*2. Cotyledons starting at the bend of the embryo.

*d*1. Silicle winged all round, septum narrow; or a 1–2-seeded schizocarp. Cotyledons not folded; radicle lateral. Only lateral honey-glands. Calyx not gibbous. Petals white, rarely pink. 6. *Thlaspi*, p. 428.

*d*2. Fruit a silique, rarely a silicle; sometimes transversely segmented, or a 1–2-seeded schizocarp. Usually both lateral and median honey-glands.

*e*1. Style more or less lobed, or depressed.

*f*1. Embryo with dorsal radicle and flat or arched or longitudinally folded cotyledons. Silique long, 2-valved, with numerous, 1-(rarely 2-) seriate globose, wingless seeds. Style short, 2-lobed. Median honey-glands. Flowers yellow, rarely white or pink. Leaves entire, or toothed, or pinnately lobed. 7. *Sisymbrium*, p. 429.

*f*2. Embryo with the cotyledons longitudinally folded. Siliques, sometimes transversely segmented, with erect seeds, and mostly a soft septum in the distal segment. Flowers racemose. Median honey-glands.

*g*1. Seeds all pendulous; or distal seeds erect, but not in a specially enlarged segment. Silique with an apical, not flattened, rostrum. Cotyledons conduplicate.

*h*1. Silique dehiscent; its seeds 1-seriate, globular or slightly compressed. Cotyledons 2-lobed. Flowers yellow or white to violet. 8. *Brassica*, p. 432.

*h*2. Silique dehiscent, constricted between the seeds, but not jointed. Petals white or yellow. 9. *Raphanus*, p. 433.

*g*2. Seed solitary in a special apical segment, enlarged before anthesis; the normally barren proximal part of the silique resembling a gynophore. Cotyledons 2-lobed; radicle dorsal. Petals white. 10. *Crambe*, p. 433.

*f*3. Embryo with lateral radicle. Fruit dehiscent, its valves with the mid-vein obsolete. Median honey-glands present or not.

*g*1. Valves convex. Fruit globular to linear. Seeds minute, round, 2-seriate. Petals white or yellow, not cleft.

11. *Roripa* (*Nasturtium*), p. 433.

*g*2. Valves flat (save impressions by seeds); finely reticulate; elastically dehiscing. Seeds 1-seriate, pendulous, mostly wingless. Stem leafy, at least below. Petals white or pink (rarely none).

12. *Cardamine*, p. 435.

AA. Hairs all or some branched; rarely unbranched or none. Sometimes also glandular hairs or gland-tubercles.

*b*1. Stigma equal all round, on the simple or prolonged or lobed style.

*c*1. Silique linear, its values flat. Radicle dorsal. Petals pinnatifid, white or purple.

13. *Schizopetalum*, p. 439.

*c*2. *Silicle* globular, septum as broad as the fruit. Radicle lateral. Petals entire, yellow.

14. *Lesquerella* (*Vesicaria*), p. 439.

*b*2. Stigmas stronger above the placentæ; style simple or more or less 2-lobed above the placentæ.

*c*1. Surface-cells of the septum not transversely divided.

*d*1. Surface-cells of septum without parallel partitions.

*e*1. Fruit mostly short, a silicle; seeds several in its cells. Only lateral honey-glands. Flowers small, white.

*f*1. Valves carinate, with a strong mid-vein. Septum narrow.

*g*1. Silicle apically rounded or pointed. Radicle varying.

15. *Hutchinsia*, p. 440.

*g*2. Silicle distally broadened or indented and obcordate. Radicle lateral.

16. *Bursa* (*Capsella*), p. 440.

*f*2. Fruit oblong to linear, a rather flat silicle. Seeds 2-seriate, wingless. Filaments winged or toothed. Petals white, sometimes yellow, entire or cleft.

17. *Draba*, p. 441.

*e*2. Fruit mostly a long silicle or a silique; style short, rarely depressed. Lateral honey-glands uniting with a median into a ring (or no mid-gland).

*f*1. Fruit linear or lanceolate, with fibers in the septum. Seeds oblong, wingless; radicle dorsal. Leaves dissected. Petals yellow.

18. *Sophia* (*Descurainea*), p. 447.

*f*2. Fruit linear, no fibers in the septum. Valves flat, with weak mid-vein, not elastically dehiscing. No gynophore. Seeds flat, winged or marginless. Radicle lateral. Petals white or yellow, entire.

19. *Arabis*, p. 451.

*d*2. Surface-cells of the septum with many parallel parti-walls, polygonally arranged in special cells. Silicle pyriform to elliptic, or a 1-seeded achene. Radicle lateral. Honey glands lateral, or also with 2 mid-glands. Flowers racemose. Petals yellow, entire.

*e*1. Calyx open or erect, not saccate. Silicle more or less flat; its cells 1-several seeded. seeds wingless.

20. *Alyssum*, p. 451.

*e*2. Calyx closed, saccate or not. Silicle inflated, its valves cartilaginous; basi-attenuate. Seeds flat. 14. *Lesquerella* (*Vesicaria*), p. 439.

*c*2. Surface cells of the septum transversely parted. Flowers white to purple.

*d*1. No glandular hairs or tubercles. No fibrous layer on the septum. Fruit ovate to linear, with convex valves and capitate stigma. Seeds 2-ranked. Radicle dorsal (?). 21. *Braya*, p. 451.

*d*2. Glandular hairs or tubercles usual. Hairs usually branched. Radicle dorsal. Stigma with 2 erect lobes. Siliques subcylindric; valves 1-nerved. Seeds 1-ranked. 22. *Hesperis*, p. 453.

1. MENONVILLEA DC.

Perennial to suffruticose, smooth plants, with linear or pinnatifid *leaves*, rather fleshy, and racemose *flowers*. *Sepals* long, erect, saccate. *Petals* linear, white or dull red. *Honey-glands* upright, scale-like. *Silicle* on a gynophore, dorsally compressed, with broad lateral *wings*, and long *style*. *Mericarps* 1-seeded. *Embryo* incumbent.

Species 4 in Chili and Peru. Closely allied to *Decaptera* and *Hexaptera*.

M. PATAGONICA Speg.

Low, hispid, green annual, with simple hairs; branching from the base. *Leaves* pinnatifid. *Racemes* dense-corymbiform, elongating in maturity; rachis straight or subflexuose. *Flowers* small, white. *Silicle* glabrous, its valves suborbicular, subconvex ventrally, concave dorsally, having a mid-nerve, otherwise smooth. *Wing* broad, rigid, repandulous at apex and emarginate at base.

Chubut, in dry hills between Teka-choique and Carren-leofú.

2. HEXAPTERA Hook.

Herbs or undershrubs, with radical and cauline, entire or pinnatifid, subspatulate *leaves*, and short, bractless corymbs of whitish *flowers*. *Sepals* equal at the base. The longer *stamens* sometimes connate in pairs. *Silique* rather large, dorsally compressed, 6-winged; the cells 1-seeded. *Style* short. *Stigma* capitate. *Seeds* not margined. Cotyledons plane.

Species 7, Chili and Patagon.

1. H. CUNEATA Gill. & Hook.

Slightly hairy. *Leaves* with slender petioles, apically 3-toothed, only 1-nerved. *Stems* cespitose, ultimately erect.

Chili; N. W. Patagon., on dry rocks near Lago Nahuel-huapi.

2. HEXAPTERA NORDENSKJÖLDI Dusén. (Plate XVII.)

Root stout, fusiform. *Stems* numerous, simple or nearly so, thickish, with the leaves crowded upwards. *Leaves* woolly, cuneate, 3-nerved and 3-lobed, the lobes narrow, rounded at the apex. *Racemes* dense, hemispherical. *Sepals* oval, 3-nerved, hairy outside. *Petals* spatulate, twice as long as the sepals, pale yellow, reddish upwards.

S. Patagon., O. Nordensk. at Cerro Contreros, 900 meters altitude; near source of Rio Coy, by Hatcher; "abundant in Cordilleras above the timber-line." Hatcher's specimens have the petals and the lobes of the leaves broader than in Dusén's description.

3. H. TRIDENS Phil.

Hoary pilose. Leaves obscurely and long triangular, apically truncate and 3-toothed. *Petals* white.

Mountains at Cuestada Maracoyo, S. Amer., at 4,000 meters elevation. (Not in Patagonia?)

3. LEPIDIUM Linn. Pepper-grass.

White *flowers*, often with fewer than 6 *stamens*. *Petals* short or none. *Silicles* oblong or obovate, flat with narrow septum, its valves keeled, dehiscent. *Seeds* 1 in each cell, flat. Cotyledons incumbent (or falsely accumbent through torsion). (Figs. in Eng. & Prantl, iii, 2, p. 160.)

Species 160, most in temperate zones; some in Chili, Argentina, Australia and New Zealand.

KEY TO THE SPECIES.

A. Leaves entire, or the lower pinnatifid, linear. Silicles orbicular, longer than the pedicel. Flowers small. *spicàtum.*

*A*2. Leaves bipinnatifid, and further cleft. *bipinnatifidum.*

*A*3. Leaves once-pinnatifid. Silicles wingless. *bonariense.*

*A*4. Lower leaves pinnatifid, others entire.

b. Silicles suborbicular, wingless. Petals none. Flowers small. *ruderale.*

*b*2. Silicles oval-orbicular. Petals none in upper flowers. Pedicels inclined. *racemosum.*

*b*3. Silicles oval, winged all round. *sativum.*

1. L. BIPINNATIFIDUM Desv.

5–30 cm. high, branches pubescent. *Leaves* 2-pinnatipartite, their lobes multifid; rachis winged. *Silicles* oval, emarginate, half as long as the pedicels.

(Widely distributed, about habitations.) Magellan, N. and E. Fuegia. (Dusén.)

2. LEPIDIUM BONARIENSE Linn. 1753. (*L. pubescens* Desv., 1814.)

Stem and pedicels villous. Upper branches surpassing the stem. *Leaves* glabrous, pinnatifid; the lobes linear, few-toothed. *Flowers* minute. *Silicle* subelliptical, retuse-emarginate, its valves carinate, wingless. *Style* very short.

Of wide range through Brazil and N. Patagon.; S. Patagon., by Rio Sta. Cruz; Magellan. Varying much: form *typica* is tall, with spicate flowers; form *salinicola*, dwarf, with lax racemes.

3. L. RACEMOSUM Gris.

Diffuse annual, stem puberulous. *Leaves* glabrous, pinnatisect, with few pairs of segments, these oblong-linear, acutish; in the lower leaves with a short anterior tooth. *Racemes* dense, the *pedicels* equalling the silicle. Upper *flowers* apetalous, with 2 *stamens*. *Silicle* oval-orbicular, emarginate. *Stigma* sessile. *Valves* at length reticulate.

Magellan, at Oazy Harbor, and at Punta Arenas. Brunswick Penins., about the bays and capes. (Lechler).

4. L. RUDERALE Linn.

Radical leaves pinnatifid. *Cauline* linear, entire, or nearly so; all glabrous. *Flowers* minute, usually apetalous, 2-staminate, with minute style on the small, roundish, emarginate *silicle*. (Fig. in Brit. & Br. ii. 111.)

(Eur. & N. Amer.), Patagon., by R. Sta. Cruz, not common, a low and weak form; and near Rio Negro.

5. L. SATIVUM Linn. Garden-cress.

Leaves variously divided and incised, the upper being smaller and often entire, all bright green. *Silicles* orbiculate, 4 by 2 mm., emarginate, the valves navicular, winged. *Styles* very short.

(Eur. and N. Am. in waste places and cultivated); S. Patagon., in fields near R. Sta. Cruz.

6. LEPIDIUM SPICATUM Desv.

Leaves linear, entire, or the lower pinnatifid, glabrous. *Flowers* small. *Silicle* orbiculate, emarginate, rather exceeding the pedicel; its *valves* carinate, wingless. *Style* short.

(Chili; Brazil); Patagon., by R. Sta. Cruz; Magellan; Fuegia, Ushuaia.

4. DELPINOËLLA Speg. (Nova Addenda ad Floram Patagonicam, p. 227.)

(*Cruciferacea lepidinea.*) *Sepals* equal at the base, not saccate. *Petals* linear, entire. *Stamens* 6, free, not toothed. *Silicles* didymous, laterally compressed, slightly retuse at apex, the *valves* turgid, coriaceous, 1-locular, ventrally gaping by a chink, dorsally callus-marginate, externally rugose, 1-*seeded*. *Style* persistent, longish, thickish; *stigma* capitellate subentire. *Seeds* solitary and pendulous in the locules, obovate, rostrate, immarginate (rimless); *testa* membranaceous with a thin muciparous tunic; *endosperm* mucous, sparse; *embryo* largish, green; cotyledons *incumbent; radicle* very long, scarcely curving, superior.

A woody glabrous undershrub, with very short branchlets at the tops of the branches densely botryose-cespitose; *leaves* minute, ovate, densely imbricate; *flowers* small solitary, subsessile on acrogenous branchlets; *fruit* largish, glabrous.

(Allied to *Coronopus* by the structure of the silicle.)

D. PATAGONICA Speg.

Densely cespitose, green; branches subdichotomous. *Leaves* narrow, somewhat acutish, and somewhat subcarinate. *Flowers* white. *Silicles* surrounded by the persistent sepals which are scarcely accrescent.

Patagonia, in the dry, rocky, high plane between San Julian and Rio Deseado. Resembling in habit *Braya pycnophylloides* Speg. and *Benthamiella pycnophylloides* Speg., and having a long vertical root.

5. CORONOPUS Gaertn. (*Senebiera* Poir.)

Leaves mostly pinnatifid. *Flowers* small, whitish. *Stamens* often 2 or 4. Silicle small, didymous, flattened with a narrow septum; its cells 1-seeded, indehiscent, falling away as mericarps. *Cotyledons* incumbent or conduplicate.

Species 12, subtropical in Old World and Austral.; in N. Amer.; and the following:

1. CORONOPUS AUSTRALIS (Hook. f. sub *Senebiera*.)

With sparse spreading *hairs*. *Stems* diffuse, ascending, branching. *Leaves* subpinnatifid with incised lobes. *Silicles* on long pedicels, rather large, slightly reticulate.

Patagon., by Lago Argentino; Isla Pavon in R. Sta. Cruz.; Chonos Archip.; (also in Jamaica and S. United States.)

Allied to *C. pinnatifidus* of Eur. and of N. and S. Amer.

2. C. CORONOPUS (L.) Karst. *C. coadunatus* Stokes, *C. didymus* L. (non Smith), *Senebiera pinnatifida* (DC.).

Leaves pinnatifid, the lobes entire or toothed or pinnatifid. *Sepals* roundish, their margins whitish, membranaceous. *Pedicels* stout. *Silicles* acutish, their valves crested and wrinkled; 4 mm. broad by 3 mm. high.

(Eur., nat. in N. Amer.) Fuegia, at Ushuaia, rare, in dry meadows. N. Patagon., plains near Carmen.

3. C. DIDYMUS Smith.

Silicle-valves not crested, only 2 by 1 mm. *Pedicels* slender. (Fig. in Eng. and Prantl, iii, 2, p. 161.

S. Amer. and northwards in N. Amer., Old World, and N. Austral.

4. C. RHYTIDOCARPUS (Hook. sub *Senebiera*).

Slender procumbent, branching. *Leaves* entire or pinnatifid, with few segments, acute. *Corymbs* small, of few minute flowers. *Sepals* concave. *Petals* at least sometimes none. *Stamens* 2? *Silicle* orbicular, rugose.

Patagon.

6. THLASPI Linn.

Erect, glabrous herbs, with basal, rosulate *leaves*, and upper cauline *leaves* auriculate and clasping. *Flowers* white or purplish. *Silicles* mostly emarginate, flat, with narrow septum. *Seeds* 2 or more in each cell. *Cotyledons* accumbent.

Species 60, Eurasian; most in Mediterr. region, with outliers in Austral., N. Amer. and Chili.

1. THLASPI ALPESTRE Linn.

Leaves entire, the radical ovate, petiolate, the cauline oblong, amplexicaul. *Petals* about equal to sepals. *Silicles* obcordate, 8–12-seeded; their valves winged dorsally. *Style* filiform. *Seeds* not striate.

(European Mts.); Cordilleras of S. Patagon.

2. T. GLAUCOPHYLLUM Barn.

Cespitose. *Stems* leafy, glabrous, erect, simple. *Leaves* glaucous, glabrous; the radical oblong, attenuate, petiolate, entire; the cauline sessile, ovate, basi-auriculate. *Flowers* white, corymbed. *Silicle* oblong-obovate, not winged, 10-seeded, submarginate. *Style* nearly half as long as the ovary.

(Chili); S. Patagon., by R. Sta. Cruz.

3. T. MAGELLANICUM Pers.

Perennial, 7 cm. high. Radical *leaves* oval-spatulate, stalked, almost entire; cauline oblong-sessile. *Flowers* small, white. *Petals* about equal to sepals. *Silicle* obovoid, truncately-emarginate. *Style* short. *Seeds* 8, oval-oblong, rufous, flat, not striate.

Magellan, at Sta. Magdalena by Cunningham; Rio Coy (Hatcher); E. and N. and S. Fuegia; "a steppe plant" (Dusén). Over nearly all Patagonia. "Seeming not to differ from *T. andicola* H. & A. The characters by which Reiche differentiates these are all fallacious." (Speg.)

7. SISYMBRIUM Linn.

Silique linear or linear-oblong, sessile, style short. *Sepals* subequal at base. *Seeds* 1-seriate, ovate or oblong, not margined. *Cotyledons* incumbent. *Annual* or *biennial* herbs with toothed or pinnatifid *leaves*, and simple *pubescence*. Species 50, widely distributed.

KEY TO THE SPECIES.

A. Leaves entire, linear. Glabrous, cespitose plants.	*patagonicum.*
A2. Leaves oblong, the cauline sagittate. Flowers white; stigmas 2-lobed.	*andinum.*
A3. Leaves variously pinnatifid. Flowers yellow.	
b. Leaves runcinate-pinnatifid. Siliques linear-acuminate, appressed to stem.	*officinale.*

*b*2. Leaves pinnatifid, their lobes repand. Petals white, twice as long as sepals. Stigma hemispherical. *maclovianum*
*b*3. Leaves 1–2-pinnatifid. Siliques subclaviform, on oblique pedicels. *antarcticum.*
*b*4. Leaves 2–3-pinnatifid. Pedicels spreading. *sophia.*
*b*5. Leaves all basal, remotely pinnatifid, long-petioled. Racemes long. *ameghinoi.*
*b*6. Leaves pinnatifid with linear lobes. Racemes terminal on branches. *tehuelches.*

1. SISYMBRIUM AMEGHINOI Speg.

Fleshy, glabrous perennial, with numerous, simple or subsimple stems arising from the root-crown, bearing flowers and fruit almost from their base. *Leaves* subfascicled, all radical or basal; oblanceolate in outline; remotely pinnatifid, lobes short, broad, obtuse; petiole as long as the limb. *Flowers* small in long racemes; *sepals* ovate, obtuse, glabrous; *petals* white, scarcely longer; *siliques* subtorulose, erect, appressed, largish, on a petiole one third as long; *stigma* thick, 2-lobed, sessile; *seeds* 1-seriate.

Chubut, in dry places along Rio Chico.

2. S. ANDINUM Phil.

Suffruticose, glaucescent, glabrous or hairy, to 60 cm. high, branching, leafy. *Basal leaves* subrosulate, oblong, obtuse, attenuate-petiolate, 5 cm. long, 10 mm. broad; *cauline leaves* sagittate, partly clasping; entire or remotely toothed. *Flowers* white, many in a corymb, at length racemose. *Siliques* surmounted by a thick, 2-lobed, subsessile *stigma*, themselves 3–4 times as long as the pedicel.

(Chili); Patagon., in meadows by Rio Sta. Cruz & Golfo de San Jorge. "Near *S. sagittatum.*" (Phil.)

3. S. ANTARCTICUM Fourn. (*S. canescens* Gris. non Nutt.)

Shortly pilose annual. *Stem* 80 cm. high, rather strong, with long branches. *Leaves* sparse, radical ones crowded, 5 cm. long, with plane rachis, and 5–6 prs. of pinnæ; oval, broad, passing into crenate-lobed, obtuse pinnules. *Pedicels* branching, bractless, spreading, thickish, straight, in fruit 7–8 mm., shorter than the flowers. *Sepals* yellowish, oblong, marginally lucid. *Petals* pale yellow, shorter than the sepals. *Siliques* on an oblique pedicel, subclaviform, subtetragonal, falcate, 16 mm. long. *Seeds* 2-ranked.

Magellan.

4. SISYMBRIUM MACLOVIANUM Gaud. (*S. fuegianum* Speg.)

Leaves radical, pinnati-partite, the lobes obtuse, repand-toothed, glabrous or with forked hairs. *Flowers* racemose-corymbose, *pedicels* long or short, 7–8 mm. long and broad. *Sepals* entire, ovate-elliptical, 4 mm. long, white to pale green, glabrous, uniting, the outer slightly larger. *Petals* twice as long, white, spatulate, unguiculate, 3-nerved. *Ovary* elliptical-terete, rounded on both sides, with forked hairs at base. *Style* short. *Stigma* hemispherical. *Silique* white to purplish; the valves slightly costulate. *Seeds* 2-seriate.

S. Patagon., near Lago Argentino. With glabrous and hispid varieties. ("Badly described in the books; its incumbent cotyledons seem to show that it is *Sisymbrium*.") (Speg.)

5. S. OFFICINALE (Linn.) Scop.

Erect, 30–90 cm. tall, with rigid, spreading, branches. *Leaves* runcinate, pinnatifid, the upper nearly sessile, the terminal lobe oblong, toothed. *Pedicels* 2 mm. long, erect in fruit; *flowers* yelolw. *Siliques* 12 mm. long, linear-acuminate, appressed to the stem. *Valves* with a strong rib.

(Eur., nat. in N. Amer.); Magellan; Elizabeth I.

6. S. PATAGONICUM (Speg.)

Cespitose, glabrous perennial. *Stems* sigmoid-flexuose when erect. *Leaves* all entire, linear. *Flowers* small, racemose, long-peduncled. *Siliques* slender, very long, on long pedicels.

S. Patagon., by streams near Lago Argentino, abundant.

(*S. pinnatum* and *S. sagittatum* sub *Sophia*.)

7. S. SOPHIA Linn.

Hoary, with 2–3-pinnatifid leaves, their lobes linear to linear-oblong. Peduncles slender, ascending, thrice as long as the spreading pedicels. Petals yellow, shorter than the calyx. Seeds in 1 row.

(Eur., N. Amer.); Patagon., by Rio Chubut and Rio Chico.

8. S. TEHUELCHES Speg.

Glabrous, fastigiately branching perennial, the old branches woody cinereous, the innovations subherbaceous, greenish-white, terete. Cauline *leaves* pinnatifid with rachis and 1–5 pairs of often alternate lobes,

remote, entire, acute, narrow-linear. *Flowers* in terminal *racemes* on the branches, largish, with pedicels of their own length; *petals* white, spatulate, twice as long as the yellowish-green, glabrous obtuse *sepals*. *Siliques* thickish, erect.

Patagon., near Golfo de San Jorge, between San Julian and Rio Deseado, and along Rio Chubut. ("Formerly confounded by me with *S. pinnatum*." Speg.)

8. BRASSICA Linn. Cabbage, Turnip.

Erect, branching herbs with pinnatifid basal, and toothed or entire cauline *leaves;* and yellow, racemose flowers. *Siliques* elongated, terete or 4-sided, usually tipped by an indehiscent, 1-seeded beak; the valves convex, 1–3-nerved. *Seeds* 1-seriate in the cells, marginless. *Cotyledons* conduplicate.

Species 50, Mediterr. Region, and Asia; cultivated and run wild in extratropical climates.

1. B. CAMPESTRIS Linn.

30–60 cm. tall, glabrous or nearly so. Lower *leaves* petioled, pinnatifid; upper lanceolate to oblong, clasping by rounded auricles. *Flowers* bright yellow, 9 mm. broad. *Pedicels* rather spreading. *Silique* 4 cm. long, its beak 9 mm. long. *Seeds* subspherical.

N. Patagon., as far S. as Rio Chubut. Produces tough and stringy turnips, which trouble farmers; called "Napur." (J. Ball.) Doubtless introduced.

2. B. MAGELLANICA Pers.

Leaves pinnatipartite, glabrous. *Flowers* corymbose. *Petals* white, their limb obovate. *Silique* sessile, not beaked.

Magellan, Navarino I., Falklands.

3. B. NAPUS L. Rape.

Leaves glabrous, subglaucous; the lower lyrate, toothed, cuneate; the upper cordate-lanceolate, entire, amplexicaul. *Siliques* spreading torulose. *Petals* yellow, rather small.

E. Fuegia (Dusén; "doubtless introduced").

4. B. NIGRA (L.) Koch. *Sinapis n.* (Linn.) Black Mustard.

Erect; 1 m. tall. *Lower leaves* slender-petioled, deeply pinnatifid, with large, terminal lobe, toothed all round. *Upper leaves* more sessile, not

clasping; *uppermost* are entire lanceolate blades. *Flowers* yellow, 8 mm. broad, the pedicels slender, appressed. *Silique* 4-sided, narrow-linear, 12 by 1 mm. *Raceme* narrow. *Seeds* dark.

(Eurasia, nat. in N. and S. Amer.) N. Patagon.

9. RAPHANUS Linn.

Erect, branching herbs with lyrate *leaves* and showy *flowers*. *Style* slender. *Silique* linear or oblong, tapering apically, indehiscent, constricted or continuous, spongy between the seeds. *Seed* subglobular.

Species 6, natives of Eurasia.

1. R. RAPHANISTRUM Linn. Wild Radish.

Stem 30–45 cm. high. *Leaves* petiolate, rough. *Flowers* pale yellow to white or lilac. *Silique* long-pointed and longitudinally grooved, 4–10-seeded.

(Eur.); N. Patagon., by Rio Negro.

2. R. SATIVUS Linn.

Achenes fleshy, not longitudinally grooved, 2–3-*seeded*. *Flowers* pink or white. *Root* deep, fleshy.

(Asia); Magellan.

10. CRAMBE Linn.

Branching herbs or shrubs from thick caudex, usually with large pinnatisect *leaves*, and long or compound *racemes* of white *flowers*. *Sepals* subequal. The longer *stamens* often toothed outside. *Silique* erect-patent, 2-jointed, indehiscent, the lower joint like a pedicel. *Seeds* globose. *Cotyledons* conduplicate.

Species 16, Eurasia and Atlantic Is.

C. FILIFORMIS Jacq.

Stem solitary, slender, rather hispid below. *Leaves* pinnate-lyrate, pilose, the terminal lobe ovate. *Filaments* long, scarcely toothed. *Silicles* blunt, slender, 2-jointed, terete, the lower joint the longer.

(Chili); Magellan.

11. RORIPA Scop. 1760. (*Nasturtium* R. Br. 1812.)

Branching herbs, with simple or pinnate *leaves*, and yellow or white *flowers*. *Sepals* spreading. Stamens 1–6. *Siliques* short or long, their

valves usually 1-nerved. *Seeds* mostly 2-seriate in each cell. *Cotyledons* accumbent. *Pubescence*, if any, simple.

Species 25, chiefly N. Temperate.

1. Roripa bonariensis (DC. sub *Nasturtium*).

Annual, with pinnatipartite *leaves;* the lobes distant, linear, subdentate, glabrous. *Silique* suberect, terete-compressed, 2–3-times as long as the *pedicel.*

(Argentina); Patagon., near Rawson (Dusén).

"The Patagonian specimens always have *white petals*, often with a rose tinge on the outside." (Speg.)

2. R. palustris (L.) Bess. Yellow Water-cress.

Erect, annual or biennial, nearly glabrous. *Lower leaves* petioled, oblong or oblanceolate, pinnatifid, the lobes repand or toothed; *upper leaves* subsessile, dentate. *Pedicels* slender, 6 mm. long in fruit. *Flowers* yellow, 5 mm. broad. *Siliques* linear or linear-oblong, as long as the pedicels. *Style* 1 mm.

(Eur., N. Amer.); Chubut, in marshes by Cabo Raso; by Carren-leofú, etc.

3. R. patens Phil.

Tall, branching, perennial (?). Lower leaves (?). Upper *leaves* distant, pinnate-lyrate; pinnules 3 pairs, linear, entire or toothed, terminal lobule oblong; uppermost leaves simple. Racemes large; peduncles longer than the calyx, which is shorter than the white petals. Stigma sessile. Siliques 2–5 cm. long, with horizontal pedicels, 4 mm. Valves nerveless (not as in the other species).

Patagon., in wet places by Rio Sta. Cruz and Lago Colu-huapi. Here the color is slightly glaucescent; lobes of leaves coarsely 3–5-dentate.

4. R. philippiana (Speg. sub *Nasturtium; N. micranthum* Ph. non DC.).

Branching annual, 20 cm. high. *Leaves* various, pinnatipartite with broad segments to lyrate; *pinnæ* 2–4 pairs, dentate in the lower, entire in the upper leaves; the terminal lobe ovate, dentate. *Silicles* almost erect, 12 mm. long by 1.5 mm. or thicker, on oblique pedicels 2–3 mm.

Patagon., by Rio. Sta. Cruz; Golfo de S. Jorge: by Rio Negro, near Carmen.

RORIPA PUBESCENS PINNATISECTA (O. Ktze. sub *Nasturtium*).

Leaves pinnatisect.

(Chili; Argentina); Patagon.

12. CARDAMINE Linn. Bitter-cress.

Erect or ascending herbs, with entire or lobed or pinnate leaves, and white or purple racemes. Siliques long, flat, usually erect; their valves nearly nerveless, elastically dehiscing. Stipe none. Seeds 1-seriate in each cell, marginless. Cotyledons accumbent.

Species 75, in temperate regions.

KEY TO THE SPECIES.

A. Leaves pinnate.
- *b*. Leaflets orbicular, abruptly attenuate basally. *hirsuta*.
- *b*2. Leaflets not basi-attenuate.
  - *c*. Terminal leaflet reniform. *glacialis*.
  - *c*2. Terminal leaflet obovate. *strictula*.
  - *c*3. Pinnæ 5, rounded. Sepals ribbed. *corymbosa*.
  - *c*4. Leaflets all basal, ciliated; terminal pinnæ large. *ciliata*.
  - *c*5. Lower leaves lyrate, segments reniform. Stigma capitate. *tuberosa*.
  - *c*6. Terminal leaflet cuneate-oblong, 3-toothed; upper leaves ternate. *ramosissima*.
  - *c*7. Lower leaves entire, small, with a pinnate pair below; cauline leaves simple. *nana*.

*A*2. Leaves pinnatisect.
- *b*. Segments of radical leaves rounded, of cauline angulate. Style filiform. *amara*.
- *b*2. Segments of radical leaves rounded, of upper oblong-sessile. Style thick. Stout herb. *antiscorbutica*.
- *b*3. Bipinnatisect; cauline leaves similar, but smaller. *geraniifolia*.

*A*3. Leaves pinnatifid.
- *b*. Segments of radical leaves 2–3 pairs. Petals 2–3 times as long as sepals. *magellanica*.
- *b*2. Segments linear-lanceolate. Siliques divaricately erect. Styles long. *patagonica*.
- *b*3. Segments 3 pairs, fleshy. Style none. Stem none. *pygmæa*.

*A*4. Leaves cordate-rounded, entire toothed. *rostrata*.

*A*5. Leaves all entire, oblanceolate. Floating plant, long stem rooting. *callitrichoides*.

1. C. AMARA Linn.

Leaves pinnatisect; segments of radical leaves subrotund, of cauline dentate-angulate. *Style* filiform, acutish. *Stem* rooting at the base.

(Eurasia.) Patagon., Punta Arenas. (J. B. Hatcher.)

2. C. ANTISCORBUTICA Banks & Sol.

Robust, sometimes villous, from a branching rhizome. *Leaves* rosulate, pinnatisect, varying; radical leaflets 3–4 pairs, rounded, stalked;

toothed; upper leaflets oblong, subsessile. *Racemes* contracted at anthesis; in fruit with erect, large peduncles. *Petals* twice as long as sepals. *Style* thick.

Magellan, Beagle Channel to Cape Horn; Chubut, by streams in subandine woods.

CARDAMINE ANTISCORBUTICA ANDICOLA Alboff.

Low, glabrous, many-stemmed. *Leaves* chiefly radical, the lateral lobes small. Few-flowered *corymb*.

Fuegia Mts., near Ushuaia.

C. ANTISCORBUTICA UMBROSA Alboff.

Pubescent. *Leaf-lobes* all similar, except size. *Raceme* lax. *Fruit-style* long.

Fuegia, near Olivaia.

3. C. CALLITRICHOIDES Speg.

Stems slender, long, repent below and rooting; above flagellar, floating. *Leaves* all entire, alternate, small, oblanceolate, obtuse, basi-cuneate, subsessile. *Flowers* minute, axillary and solitary in the uppermost part of the branches, shortly pediceled. *Siliques* narrow-linear, acutish.

Chubut, in slow waters by Rio Carren-leofú.

4. C. CILIATA Phil.

Erect, leafless above, glabrous. *Leaves* crowded at base, all pinnate, ciliate. *Pinnæ* stalked, the terminal largest and lobed. *Racemes* with few, short-pediceled flowers, having ciliate *bracts*.

Falklands.

5. C. CORYMBOSA Hook. f.

Branching near the base, the branches slender, flexuose, few-leaved. *Leaves* long-petioled, pinnate; *leaflets* about 5, rounded, subsessile, the lateral ones distant. *Flowers* white, mostly corymbed. *Sepals* ovate, ribbed. *Petals* spatulate.

Fuegia, Orange Harbour. (Also common in Campbell's I., S. of N. Zeal.)

6. C. GERANIIFOLIA DC.

Woody at base. *Radical leaves* long-petiolate, bipinnatisect, pinnules petiolulate, broad ovate, trilobed, and their lobes toothed; *cauline leaves*

similar, but smaller. *Corymb* with few, large flowers, white to pinkish. *Silique* linear, obtuse.

Magellan, Fuegia to Cape Horn.

7. Cardamine glacialis DC.

Stems much branching, leafy. *Leaves* pinnatisect, subciliate, the lower segments sessile, 2 pairs, very small; the terminal very large, reniform, stalked. *Siliques* subfiliform, erect. *Flowers* white.

N. Patagon., Rio Negro; Magellan, Fuegia, Orange Bay. Falklands. "Nearly under the snow in Fuegia."

8. C. hirsuta Linn.

Radical leaves rosulate, pinnate, pubescent, the pinnæ 2–5 pairs, entire, the terminal larger; *cauline leaves* few, with narrow pinnæ. *Flowers* small, white. (Fig. in Brit. & Br. ii. 128.)

Widespread in Old World and U. S.; also in Fuegia, Falklands, and Tristan.

C. hirsuta nivalis. With larger leaves.

C. hirsuta magellanica (Ph.).

Leaflets or segments of the radical leaves sessile, 2–3 pairs. *Petals* two and a half times as large as the sepals. *Peduncles* 3 mm., and thickish.

Magellan; W. Patagon., in wet shrubberies by Rio Aysen.

9. C. nana Barn.

Annual, hairy plant (glabrous in Argentina), cespitose. *Leaves* long-petiolate, ovate, small, entire, or with 2 pinnæ below on the petiole; cauline leaves linear-spatulate. *Flowers* small, solitary in the axils. *Petals* white, twice as long as the green *sepals*. *Siliques* erect, narrow, acutish both ways; *stigma* minute, sessile. *Pedicel* subdivaricate, shorter than the subtending leaf. *Seeds* 7–9, 1-seriate.

N. Patagon. in wet places near Carmen.

10. C. patagonica Speg.

Glabrous, perennial herb. *Stem* branching, decumbent below, angular, striate. *Leaves* broad-ovate, the lower with long, the upper with short petioles; deeply pinnatifid, their lobes linear-lanceolate, acute, sparingly

and coarsely toothed, and repand-toothed. *Flowers* racemosely spicate, mediocre, white. *Siliques* divaricately erect, glabrous, as long as their pedicel. *Style* rather long.

S. Patagon., by Rio Sta. Cruz.

11. Cardamine pygmæa Dusén.

Very low, stemless, glabrous. *Leaves* subrosulate, about 8, long-petiolate, mostly pinnatifid, segments 3 pairs, fleshy, thick-margined. *Racemes* few-(4–7-) flowered, white; rather large flowers. *Sepals* oval, scarious-margined. *Petals* twice as long, spatulate. *Siliques* patent, as long as the pedicel; stigma sessile.

E. Fuegia. (Dusén.) (Fig. 72.)

Fig. 72.

Cardamine pygmæa (after Dusén).

12. C. ramosissima Steud.

Plant hairy rooting from the base of the stem. Radical and lower *leaves* pinnate, 3 pairs, and a larger terminal leaflet, cuneate-oblong, tridentate; *upper leaves* ternate, with linear leaflets. *Raceme* long. *Petals* 6 mm. long, white with a violet center. *Sepals* half as long. *Siliques* erect, 25 by 2 mm., twice as long as the pedicels, attenuate to the style and minute *stigma*.

(Araucania); Patagon., by Carren-leofú, and Rio Sta. Cruz.

13. C. rostrata Griseb.

Smooth, branching perennial, with long-petioled *leaves*, entire or cordate-orbicular, toothed. *Racemes* lax. *Siliques* erect, spreading, compressed, 4 times as long as the pedicels, attenuate to a filiform *style*, subobtuse, 6 mm. long.

Chubut, by Carren-leofú; W. Patagon., by Rio Aysen.

C. rostrata dichondroides Speg.

Leaves firm, glaucous, not pellucid, entire, often minutely ciliolate. (Sterile peat as of *Dichondra repens* Forst.)

14. C. strictula Steud.

Rhizome sublignescent, fibrilliferous. *Stems* cespitose, or solitary, strict, to 30 cm. pubescent. *Leaves* pinnate, 6–8, pinnæ various, the

uppermost usually the largest; the others narrow to oblong, or rounded, toothed or incised. *Flowers* white; *petals* twice as long as the sepals. *Siliques* strict, tetragonal, glabrous, twice as long as the pedicels (34–50 mm.)

Patagon., at Punta Arenas.

15. CARDAMINE TUBEROSA, Dmb.

Perennial, hairy or villous. Lower *leaves* lyrate, 1–2(3) pairs of leaflets, the terminal or all reniform; cauline leaves with the terminal part smaller. *Corolla* 8–10 mm. 2–3 times as large as the calyx. *Siliques* 3–4 cm.; pedicels 1.5–2 cm. *Style* short, stigma capitate. Height 25 cm.

(Chili.)

C. TUBEROSA VELUTINA Speg.

Smaller than the species; *stems* and *leaves* very velvety-hispidulous; *Style* of fruit longer.

Patagon., on dripping hills near Putra-choique.

13. SCHIZOPETALUM Sims. (non Boiss.).

Erect annuals, hoary, with branching hairs. *Leaves* sinuate-toothed to pinnatifid. *Raceme* bracted. *Petals* white, pinnately lobed. Silique linear, its valves 1-nerved, reticulate. *Seeds* 1-seriate, globose to oblong. *Cotyledons* incumbent, twisted, bifid.

Species 5, Chili, etc.

S.(?) FUEGIANUM Speg.

Farinose. Stem thick, woody. *Lower leaves* rosulate, ovate-elliptical, long-petiolate, pinnatifid; the lobes broad, obtuse. *Upper leaves* shorter, uppermost sessile. Floriferous branches few-leaved, long-spiked.

Patagon., maritime rocks; Fuegia, on rocks by Elizabeth I., etc.

("Ob petala integra a *Schizopetalo* removenda," v. sub *Sisymbrio*. C. Speg.)

14. LESQUERELLA S. Wats. (*Vesicaria* Lam., p.p.)

Low herbs, with stellate *hairs*, simple leaves, and usually yellow *racemes*. *Petals* entire. *Anthers* sagittate. *Silicle* usually inflated, globose or oblong; the *valves* nerveless; the septum nerved in the upper half. *Seeds* several, flat. *Cotyledons* accumbent.

Species 32, Greenland to Pacific Amer. and middle United States.

1. LESQUERELLA MENDOCINA (Phil.) Small. (*Vesicaria andicola* Gill., nomen.; *V. arctica* Barneoud.)

Tufted, erect, to 2–4 cm., from woody rhizome. *Leaves* spatulate or oblanceolate, subentire, the upper sessile. *Corymbs* many-flowered. *Petals* 4 mm. long. *Silicle* short-oval, few-seeded, the septum perforated. *Style* slender, 2 mm. Varying as to broadness and margin of the leaves.

(Arctic and N. Amer., Brazil); N. Patagon., along Rio Negro, near Carmen de Patagones.

2. L. MONTEVIDENSIS (Eichl.) Wats. (="*L. mendocina* Phil." in Index Kewensis, sub *Vesicaria*).

Compactly lepidote. *Leaves* narrow to linear-oblanceolate, entire or repand-dentate. *Flowers* large. *Style* 2 mm. long. *Silicle* 6 mm. *Cells* 4-ovuled.

(Brazil; Chili); N. Patagon.

15. HUTCHINSIA R. Br.

Low herbs with forked *pubescence*, and *racemes* of small, white flowers, the *peduncle* elongating in fruit. *Style* none or short. *Silicle* oval, compressed, with narrow septum; its valves with midrib. *Seeds* numerous.

Species 8, N. Hemisph., 1 in Asia and Austral.; 2 in Bolivia. and 1 in Patagon.

H. RETICULATA Griseb.

Dwarf, diffuse, glabrous annual. Lowest leaves pinnatisect, long-stalked; segments mostly only 1 pair, short, obtuse. Cauline leaves oblong, auricled or entire. Flowers few. Silicles oblong, obtuse. Valves reticulate. Cotyledons accumbent.

Patagon., by Golfo de San Jorge, and Lago Argentino; Magellan, Brunswick Penins.

16. BURSA Weber. (*Capsella* DC.) Shepherd's-purse.

Erect annuals, with forked *hairs*, and basal rosettes of pinnatifid *leaves*. *Silicles* cuneate-obcordate, compressed, with narrow septum; the *valves* keeled. *Style* short. *Seeds* numerous. *Cotyledons* accumbent.

Species 2, Eur., widely distributed as weeds and polymorphous. Some Australian forms are also closely allied to this genus.

1. BURSA BURSA-PASTORIS (L.) Brit.

Flowers white. *Stem-leaves* few, auricled-dentate to entire.

Patagon., near Rawson (Dusén); Magellan; Fuegia, Ushuaia.

2. B. PROCUMBENS (Linn.) O. Ktze. (*Hutchinsia* Hook. f.)

Dwarf, 3–8 cm. high. *Leaves* entire or deeply toothed, not pinnatifid. *Racemes* elongated and open in fruit. *Petals* as long as the calyx. *Capsule* narrowed at both ends.

(New Zealand); Patagon., near Lago Argentino, by Golfo de San Jorge, and Rio Chubut.

15. DRABA Linn. Whitlow-grass.

Low, mostly *stellate-hairy*, with simple, often rosulate *leaves* and mostly bractless *racemes*. *Silicles* elliptic or oblong, or long, like siliques, flat. *Stigma* subentire. *Seeds* 2-seriate, wingless. *Cotyledons* accumbent.

Species 150, N. Temperate and Arctic; few in Southern S. Amer.

KEY TO THE SPECIES.

A. Small, hirsute below with stellate hairs; scape naked above.
- *b*. Flowers green, apetalous. Silique with simple hairs. — *ameghinoi*.
- *b*2. Flowers small, white. Silique glabrous. — *argentina*.

*A*2. Low, radical leaves oblong-lance, silky above. Pedicels and silicles glabrous. — *australis*.

*A*3. Stems mostly short.
- *b*. Stellate-hairy.
  - *c*. Leaves obovate, oblong. Flowers small; on long naked peduncles. — *brackenridgei*.
  - *c*2. Leaves linear, obtuse. — *saffordi*.
  - *c*3. Leaves lanceolate to ovate. Erect or branching. Silicles twisted when ripe. — *incana*.
  - *c*4. Leaves oblong. Ripe silicles twisted on long pedicels. — *gillesii*.
- *b*2. Silky-hirsute, ovate-lanceolate leaves. — *falklandica*.
- *b*3. Glabrous.
  - *c*. Leaves linear-lanceolate, ciliate-toothed. — *funiculosa*.
  - *c*2. Cespitose. Leaves fasciculate, narrow.
    - *d*. Leaves long, acutish. — *graminifolia*.
    - *d*2. Leaves narrow-linear, subobtuse. — *oligosperma*.
  - *c*3. Fleshy.
    - *d*. Leaves orbicular to obovate, toothed or incised. — *karraikensis*.
    - *d*2. Leaves oblong linear, often ciliate, margined. — *monantha*.

*A*4. Stems several, leafy; leaves glabrous.
- *b*. Leaves long-spatulate to oblong-linear. — *depilis*.
- *b*2. Leaves oblanceolate, subterminally rosulate. Flowers crowded, bracted. — *hatcheriana*.
- *b*3. Leaves pinnatifid, toothed and ciliate. — *patagonica*.

1. DRABA AUSTRALIS AMEGHINOI Speg. (*D. ameghinoi* Speg.)

(*Drabella.*) Small, hirsute annual, with rosulate, elliptic leaves, or obovate, *stellately pubescent*, entire. *Scapes* simple, or forked at the base, leafy, stellately hairy below, naked above. *Flowers* spicately racemose, green, with few simple hairs; *petals* none. *Silique* large, elliptical, with small, simple hairs. (More robust than *D. argentea*, and distinguished by its hairy silique.)

Patagon., stony planes by Golfo de San Jorge.

2. D. ARGENTINA Speg.

(*Drabella.*) Small, hirsute annual. *Leaves* chiefly rosulate, lanceolate to nearly ovate, acute-rounded above, attenuate below, sessile, entire, rough, with white spreading, stellate *hairs*. *Scapes* simple or branching, slender, glabrous, but with some stellate hairs, naked above. *Flowers* racemosely spicate, very small, white, glabrous. *Silique* glabrous, rather large, elliptical, on a smaller pedicel.

(S. Argent., near Bahia Blanca); Patagon., by Golfe de San Jorge; by Rio Sta. Cruz.

D. ARGENTINA GRANDIFOLIA Speg.

Flowers larger, the white petals twice as long as the green sepals.

D. ARGENTINA LATIFOLIA Speg.

Leaves orbicular, or elliptic-obtuse, margin obsoletely repand.

3. D. AUSTRALIS Hook. f.

Low annual, with subsimple *stem*, few radical *leaves* rosulate, oblong-lanceolate, entire, obtuse, with silky, simple *hairs* on epiphyl, and stellate hairs on hypophyl. *Flowers* white. *Pedicels* in fruit filiform, half as long as the linear-oblong *silicle*. Peduncles and silicles glabrous.

Bahia Blanca to Patagon., Rio Sta. Cruz, Puerto Madryn; N. and E. Fuegia (Ansorge, Dusén, Hatcher).

4. D. BRACKENRIDGEI A. Gray.

Stem short, 2–5 cm., divided from the perennial root, stellate-hoary. *Leaves* crowded, obovate, oblong, obtuse, 5 mm. long. *Peduncles* long, naked; racemes dense. *Flowers* small, white. Silicles oblong to lance-elliptical, hairy. *Style* short. *Valves* rather plane.

(Bolivia.) Patagonia (?).

5. DRABA CHUBUTENSIS Speg.

Tall, cespitose, all laxly pulverulent-pubescent; hairs all stellate. *Leaves* as fascicled innovations, oblanceolate, proportionally large, entire, long attenuate-petiolate; *cauline leaves* few, larger, elliptical-ovate, entire or repand-toothed. *Scapes* very branching, racemes long, lax; *silicles* on a pedicel 2–3 times their length, glabrous, rather small, plane with a *style* half their length.

Patagon., in elevated places near Teka-choique.

6. D. DEPILIS Phil.

Many-stemmed, long, glabrous. Radical *leaves* long-spatulate; *cauline* rather crowded, oblong-linear, sessile. *Corymbs* many-flowered, dense, scarcely elongating. *Pedicels* short, as long as the flowers. *Petals* twice as long as the sepals, white or with violet. Silicles.

Fuegia, Bahia del Esp. Santo.

7. D. FALKLANDICA Hook. f.

Stem very short, divided. *Leaves* crowded, spreading, ovate-lanceolate, subacute, silky-hirsute. *Peduncle* puberulous, leafless, or from a 1-leaved base. *Flowers* racemose to corymbose, small. *Silicles* elliptic-oblong, 3 times as long as the *pedicels*, hairy; *valves* convex; *style* long.

Falklands.

8. D. FUNICULOSA Hook. f.

Glabrous. *Stem* short, with leafy branches. *Leaves* linear-lanceolate, occasionally opposite and subconnate at the base, their margin ciliate-dentate. *Scapes* slender, few-flowered. *Flowers* small, white; *petals* spatulate, twice as long as sepals. Fruiting *pedicels* short. *Silicles* obtuse at both ends. *Stigma* bifid.

Falklands. E. Fuegia (Ansorge); Ushuaia.

"Peculiar, near *D. oligosperma* Hook., of Arctic Amer., and *D. lactea* Adams, of Samara." (J. D. Hooker.)

9. D. GILLIESII Hook. & Arn.

Perennial, with ligneous root. *Radical leaves* in a rosette, oblong, obtuse, with stellate hairs; *cauline leaves* oblong-linear, subacute, sessile, dentate. *Flowers* corymbose, afterwards racemose. *Sepals* villous; *petals*

twice their length. *Silicle* (without the style) as long as the pedicel, at first villous, afterwards smooth, and torted. *Style* 3–4 mm., *stigma* capitate. The mature *fruit* has pedicels 3–4 times as long as the silicles.

(Perhaps = *D. magellanica* Lam.)

(Chillan and Valdivia); Chubut, in the mountains at Bolson.

10. Draba graminifolia Speg.

Glabrous, cespitose, stoloniferous, 10–14 cm. high. *Leaves* fasciculate at ends of the branches, acutish, attenuate to a long petiole; the base sheathing. *Scapes* stout, lax-racemose. Lower *pedicels* with a leaf; upper naked. *Silicles* lanceolate, or narrow-elliptical. *Stigma* subsessile.

S. Patagon., rocks near Lago Argentino, at Karr-aike.

11. D. hatcheriana Gilg, n. s. (Plate XVIII, B.)

Low cushion-like perennial, with thick multicipital root, and short branches covered by the remains of withered leaves. Leaves rosulate at the ends of the branches, oblanceolate, acute, cuneato-angustate downwards, coriaceous-fleshy, obsoletely ciliate on the margin. Flowers apparently whitish, subcapitately crowded in dense 10–30-flowered racemes; on a short leafless scape, but with largish bracts at base of the pedicels. Sepals reddish, broadly obovate, apically rounded. Petals half exceeding the sepals, narrow-unguiculate below, orbicularly obovate, and apically rotundate. Ovary broad obovate, compressed. Style short, thick; stigma capitate.

S. Patagonia, by Rio Coy Inlet (collected by Hatcher, Nov., 1896, and dedicated to him on the occasion of his decease, July 3, 1904).

The following is Professor Gilg's diagnosis:

Draba hatcheriana Gilg n. sp. (Plate XVIII, B.)

Perennans humilis pulvinaris radice crassa multicipite, ramis brevibus vel brevissimis ascendentibus reliquiis foliorum emarcidis densissime obtectis; foliis apicem ramorum versus densiuscule vel dense rosulatis, oblanceolatis, apice acutis, basin versus sensim longe cuneato-angustatis, coriaceo-carnosis, margine hinc inde obsolete ciliatis; floribus verisimiliter albidis in racemos densos vel densiusculos 10–30-flores subcapitatos collectis, scapo brevi nudo, sed bracteis euphylloideis majusculis ad pedicellorum basin evolutis; sepalis rubescentibus, late obovatis apice rotundatis; petalis quam sepala plus sesquilongioribus, in parte 2/5 inf. anguste unguiculatis, superne valde dilatatis orbiculari-obovatis rotundatis; staminibus normalibus; ovario late obovato, crassiusculo, conspicue compresso; stylo brevi, crasso, stigmate capitato.

The plant rises like a cushion, about 2–2.5 cm. above the ground. Its rosette-leaves are 12–13 cm. long, at their upper part about 1.5–2 mm. broad. The inflorescence is on the whole about 1.5 cm. high, of which the flowerless part comprises 1–1.1 cm. The bracts are 3–5 mm. long, 1 mm. broad. The pedicels are about 3 mm. long. The calyx-leaves are 2.5 mm. long, nearly of the same breadth. The petals are about 4 mm. long, in the upper part 2.5 mm. broad.

"This new species appears to me to be closely allied to *Draba spegazziniana* Dusén (Gefasspflanzen der Magellanslander, p. 177.) = *Draba oligosperma* Spegazzini. Probably it does not belong to the genus *Draba;* but so long as we are unable sharply to define the generic limits of the South American species of Cruciferæ I insert it provisionally in *Draba*. It does not belong to *Braya*." (Ernst Gilg.)

12. Draba incana Linn.

Perennial or biennial, erect, simple or somewhat branched, stellate-hairy, 15–30 cm. high. *Leaves* 8–25 mm., lanceolate, or oblanceolate to ovate, acutish to obtuse; toothed or subentire. *Flowers* 2–3 mm. broad. *Petals* white, notched, twice as long as the calyx. *Silicles* oblong or lanceolate, acute, twisted when ripe, on short suberect pedicels. *Style* minute.

Arctic and alpine Eurasia. Cold parts of N. Amer., and by Rocky Mountains to Magellan.

D. incana sylvatica (Alboff.).

Tender, low, green. *Stem* simple. *Leaves* larger, membranaceous. *Less pubescent* than the type-form, *D. incana*.

Fuegia, valley of Olivaia.

13. D. karraikensis Speg.

Glabrous perennial; green-glaucescent, branching. *Leaves* fleshy, orbicular to obovate, crenate, toothed, or incised. *Scapes* leafy, apically spreading, spicate-corymbed. *Silicles* ovate to lanceolate. *Style* long; valves of silicle nerveless. *Stigma* capitellate. *Seeds* 4–7 in each cell, 2-seriate.

S. Patagon., in dry, denuded parts. Mar.–Apr. By San Julian, Golfo de San Jorge to Rio Deseado.

14. D. magellanica Lam. (including *D. saffordi* Phil. and *D. gillesii*, H. and A.) (Plate XVIII, A., the type-form.)

Perennial, 8–30 cm. high, covered by short appressed hairs. *Radical leaves* in a rosette, oblong, more or less obtuse. *Cauline leaves* sparse,

sessile, obscurely dentate. *Sepals* villous, with membranous margins. Silicles villous, shorter than the pedicels, not torted. *Style* short, less than 1 mm.

Magellan Strait, and all Patagonia. *D. saffordi* Phil. got at Gregory Bay, "was apparently established on diseased specimens." (Reiche.) *D. magellanica* varies much, as to height, and stellate hairs of leaves and stem. Coy Inlet (Peterson); Magellan (Hatcher); Fuegia (Dusén).

DRABA MAGELLANICA GLABRATA Gilg.

Stout; silicles glabrous with *pedicels* appressed to the rachis, supported by long stellate hairs; *style* long, persisting.

N. Patagon., at Neuquen, in rocks at Valle Trolope, Neuquen.

D. MAGELLANICA SUBGLABRATA Speg.

Slender. Silicles at length glabrate. *Stigma* sessile.

S. Patagon., at Guadales near Rio Sehuen.

15. D. MONANTHA Gilg.

Cespitose perennial, forming cushions. *Leaves* close imbricate, rather fleshy, oblong-linear, acutish, glabrous or mostly ciliolate-margined. *Flowers* solitary, shortly-pediceled. *Sepals* obovate, rounded, glabrous. *Petals* twice as long, narrowed to a claw, toothed-lobed upwards. *Stamens* very unequal. *Ovary* ovate, minute.

Patagon., Sta. Cruz.

D. monantha microphylla Gilg.

S. Patagon., Valley of Upper Gallegos (Nordenskj.).

16. D. PATAGONICA Phil.

Stems several, leafy. Leaves rosulate, oblong, attenuate-petiolate, pinnatifid, toothed, bright green, ciliate. Cauline leaves sessile, entire. Raceme short, crowded. Silicles glabrous, oblong, 3–4 times as long as the pedicels. Stigma sessile.

N. Patagon., near Nahuel-huapi.

17. D. SPEGAZZINIANA Dusén. (*D. oligosperma* Speg. non Hook.)

Small, glabrous, densely cespitose. *Leaves* fasciculate-rosulate, narrow-linear, entire, rather obtuse. *Scapes* long, naked below, above corymbed

by spikelets on rather long pedicels, with a rather large bract. *Flowers* small, white. *Capsule* acutely elliptical, the cells 1–2-seeded.

Patagon., Chubut, near Lago Fontana, and Lago Paz; and W. Patagon., by Rio Aysen.

18. SOPHIA Adans. 1735. (*Sisymbrium* Linn. 1735, *Descurainea* Webb. & Barth. 1836.)

Silique linear or linear-oblong; *flowers* on long pedicels, racemed, style mostly short. *Seeds* small, wingless, 1–2-seriate; *cotyledons* incumbent. Annual or biennial herbs, rarely shrubby, with bipinnatifid, or dissected *leaves*, and forked *pubescence*.

Species 12, in the N. Temperate Zone, the Canaries, and the Andes.

Key to the Species.

(The following analysis of the Patagonian forms of this genus is chiefly after Spegazzini.)

*A*1. Pubescence entirely stellate.
- *b*1. Stigma long-styled. — *deserticola.*
- *b*2. Stigma sessile.
  - *c*1. Siliques glabrous. — *sophia.*
  - *c*2. Siliques stellate-pubertulous. — *cumingiana.*

*A*2. Pubescence glandular on the stem, stellate on the leaves.
- *b*1. Leaves bipinnatifid, lobes subentire. — *pinnata.*
- *b*2. Leaves tripinnatifid, lobes toothed.
  - *c*1. Siliques glabrous. — *glabrescens.*
  - *c*2. Siliques stellate-puberulous. — *tenuissima.*
- *b*3. Leaves with glandular and forked hairs intermingled; pinnately parted, the segments multifid. — *heterotricha.*

*A*3. Pubescence entirely glandular. Siliques glabrous. Bipinnatifid. — *glandulifera.*

*A*4. Leaves fascicled at nodes, with forked hairs on under surface; pinnatifid. Siliques very long, vermicular. — *subscandens.*

*A*5. Glabrous or with forked hairs. Leaves dentate to pinnatifid; the lower petiolate, the cauline sessile or auricled. — *sagittata.*

*A*6. Glaucous. Hairs on leaves all stellate; glandular on pedicels and sepals. Leaves bipinnatifid; the segments apically lobed. — *glaucescens.*

1. S. CUMINGIANA (Fisch. & Mey. sub *Sisymbrium.*)

Plant ash-colored, with tripinnatifid *leaves*, and dense terminal *racemes*. *Petals* scarcely equalling the sepals. *Pubescence* stellate. *Siliques* as long as the pedicels, stellate-puberulous. *Stigma* sessile. *Seeds* 2-seriate.

(Chili); Patagon., near Lago Argentino.

2. SOPHIA DESERTICOLA (Speg. sub *Sisymbrium*).

Stem prostrate, creeping, 2–8 cm. long, woody, branching apically. *Leaves* densely rosulate on the branchlets, pinnately lobed or cleft, hoary-tomentose, the hairs all stellate. *Flowers* 2 or many, arising from the rosules, the pedicels 1-flowered, shorter than the leaves. *Sepals* green, sparsely pilose, equalling the white petals. *Siliques* cylindraceous, glabrous. *Style* long. (Allied to *S. canescens*, but the structure of leaves and flowers and the *persistent caudex* are distinctive. Speg.)

Patagon., by Port Rawson; in dry places between S. Julian and Rio Deseado.

3. S. GLABRESCENS Speg.

Green slender annual. *Stems* and branches glabrous, glandulose upwards. *Leaves* bipinnatifid, their lobes minute, obovate, obtuse; with few, minute, stellate *hairs*. *Petals* ochroleucous, smaller than the sepals. *Silique* glabrous with subsessile style. *Pedicels* glabrous, 2–3 times shorter than the flowers. *Pubescence* glandular on the stem; stellate on the leaves.

Patagon., by R. Sta. Cruz; Port Rawson, by Rio Negro.

4. S. GLANDULIFERA Speg.

Slender annual, with glandular-capitate hairs. *Leaves* twice pinnatifid. *Petals* yellow, longer than the sepals. *Siliques* glabrous, 2–3 times longer than the pedicels, and crowned by the subsessile *styles* (any stellate pubescence?).

S. Patagon., in fields by Rio Chico de Sta. Cruz.

5. S. GLAUCESCENS (Phil.).

Seagreen perennial, covered with short villi. *Leaves* sparsely covered with only stellate hairs, bipinnatifid, the segments 1.5–2 mm. broad, apically lobulated. *Pedicels* and *sepals* glandular-hairy. *Calyx* scarcely 2 mm. long, equal to the petals. *Siliques* spreading, coriaceous, 2–3 times as long as the peduncles.

Patagon., by Teka-choique.

6. S. HETEROTRICHA (Speg. sub *Descurainea*).

Simple erect annual, 25–50 cm. high. Stem terete, all hispid-glandular. *Leaves* erect, appressed, lanceolate, pinnately parted, 5–9 pairs of

alternate lobes, approximate, lanceolate, acute, multifid, with short acute lobules, all tomentose with glandular and stellate hairs intermixed, green, somewhat hoary. *Raceme* long; pedicels hispid-glandular. *Sepals* glabrous or sparsely glandular-hairy, ovate, green with whitish margins; *petals* spatulate, white, slightly exsert. *Siliques* glabrous, linear, attenuate both ways, at first erect-appressed, afterwards horizontally spreading, slightly longer than the pedicel. *Style* subsessile. *Seeds* 2-seriate.

Chubut; in dry hills near Lago Cholila and by Carren-leofú.

7. SOPHIA PINNATA (Walt. sub *Erysimum*) Britt. (*Sisymbrium canescens* Nutt. *Descurainea canescens* Prantl.)

Densely canescent; the *pubescence* glandular in the *stem,* stellate in the *leaves*. *Stem* erect, 20–60 cm. tall, slender; branches ascending. *Leaves* 5–10 cm. long, oblong, bipinnatifid; lobes many, entire, obtuse. *Pedicels* slender, at length spreading horizontally, 10–14 mm. long, exceeding the flattish siliques. *Style* minute. *Seeds* 2-seriate. Petals pale yellow.

(N. and S. Amer.); Magellan. S. Patagon., by O. A. Paterson, near Coy Inlet. fruiting Nov. 13, 1896; the flowers bright yellow. N. & E. Fuegia, Dusén, only on the steppes and in cultivated places.

Port San Julian to Rio Deseado.

S. PINNATA PATAGONICA (Speg. as *Descurainea canescens*).

"All the *hairs* only stellate, more or less hoary. *Seeds* always 2-seriate in my specimens." (Speg.)

All Patagonia.

S. PINNATA PURPUREOLA (Speg. as *Descurainea canescens*).

Leaves 2–3-pinnately parted, green-purpurascent. Low with dense stellate-branching *hairs*.

Patagon., between San Julian and Rio Deseado.

8. S. SAGITTATA Hook. & Arn.

Suffruticose, tall. *Leaves* membranous, oblong, more or less dentate, the lower sometimes all pinnatifid, their margins ciliate, the cauline sessile, and auricled-amplexicaul. *Racemes* many or few-flowered, the lower approximate to the leaves. *Petals* white or rose, the same size as the

sepals. Silique longer, to 44 mm., slightly arched; valves with a nerve and its ramifications. *Stigma* sessile. *Seeds* 1-seriate.

(Atacama Province); through central and andine Patagonia. Greatly varying. The following forms are given:

(*a*) *andina;* green, mostly glaucescent, glabrous. S. Patagon.

(*b*) *ciliata, leaves* glabrous, but margin ciliated. Golfo de San Jorge.

(*c*) *communis; basal leaves* dentate-subruncinate; cauline subentire. *Flowers* few. At Sta. Cruz.

(*d*) *exauriculata, leaves* without auricles. Near Rio Chico.

(*e*) *glauca.* Herbaceous, tall, glabrate. *Basal leaves* oblanceolate, angulate-repand; cauline linear, entire. By Rio Gallegos.

(*f*) *latifolia;* pale green, mostly glaucescent glabrous, *lower leaves* pinnately lobed, the cauline with broad, fleshy auricles. Lago Blanco and Rio Aysen.

(*g*) *normalis;* hairs stellate; plant obscurely green, not succulent. S. Patagon.

(*h*) *pubescens;* intensely green, lowest *leaves* glabrous, upper subtomentose, not ciliated, all the *hairs* stellate. Valle Hermoso.

(*i*) *purpurascens;* woody and rigid. *Lower leaves* acutely sinuate-toothed, purplish underneath. Patagon., by Rio Chico de la Sta. Cruz.

9. SOPHIA SUBSCANDENS Speg.

Some meters high; stems weak, subscandent, glabrous, nodose. *Leaves* fascicled at the nodes, subspatulate, coarsely and sparingly pinnate-lobed; the margin or also the under surface pilose with forked *hairs*. *Inflorescence* few-flowered. *Siliques* vermicular, very long, divaricate, briefly pediceled; their apex attenuate-stigmatose.

N. Patagon., in shrubberies near Carmen de Patagones. Root white; nodes, 30–40 cm. long, many-headed at top. Climbing branches, 80–150 cm., slender. Flowers unknown.

10. S. TENUISSIMA (Phil. sub *Sisymbrium*).

Annual, with erect *stem* to 30 cm. tall; and short, glandular-hirtellous *hairs*. *Leaves* hoary, tripinnatifid, the segments short, obtuse, narrow. *Peduncles* capillary; *racemes* lax. *Flowers* minute, yellow; *petals* scarcely exsert from the calyx; style slender, shorter than the narrow silique. Pubescence glandular on the stem, stellate on the leaves, calyx and fruit.

Patagon., by Golfo de San Jorge; and by Rio Chubut.

"The Patagonian specimens have 2-seriate seeds; the Chilian (fide Reiche) only 1-seriate." (Speg.)

19. ARABIS Linn. (including *Turritis* L.).

Herbs with entire or lobed *leaves* and white or purplish *flowers*. *Siliques* linear, long, flat, the valves mostly 1-nerved (in the following 3-nerved), not dehiscing elastically. *Stigma* 2-lobed or subentire. *Seeds* in 1–2 rows, flat, often margined or winged. *Cotyledons* accumbent.

Species more than 100, Northern and Mediterranean; some in S. Amer.

1. A. MACLOVIANA Hook.

Glabrous. *Leaves* radical, long-petiolate, oblong-obtuse, serrate-toothed below, small and narrow upwards. *Flowers* corymbose, white. *Silique-valves*, 3-ribbed.

Falklands, on the coast; Magellan.

(*A. magellanica* sub *Hesperis*.)

20. ALYSSUM Linn.

Low, branching, *stellate-pubescent* herbs, with small, racemose yellowish or white flowers. *Filaments* often dilated and toothed. *Silicles* ovate, nerveless. *Stigma* subentire. *Seeds* 1 or more in the cells. *Cotyledons* accumbent.

Species 100, chiefly in the Mediterr. region.

A. MARITIMUM Linn.

Procumbent undershrub. *Leaves* linear-lanceolate, acute, slightly hoary. *Petals* obtuse, white. *Filaments* toothless. *Silicles* oval, glabrous; their cells *1-seeded*. *Style* short.

(Mediterr., in sandy places by the sea); Patagon., near Rawson (Dusén).

21. BRAYA Sternb. & Hoppe.

Cespitose scapigerous perennials, with multicipital root, narrow radical leaves, and white, or pink, or purple flowers, often subtended by leafy bracts. Sepals subequal. Silique ovate to linear, the valves convex, stigma capitate, slightly 2-lobed. Seeds 2-(rarely 1-) seriate, many or few, marginless. Cotyledons incumbent.

The capsule is intermediate between the Siliquosæ, as *Arabis*, and the Siliculosæ, as *Draba*.

(*B. uniflora* Hook. f. & Thou. growing in Thibet at 4,500 meters of elevation, has connate sepals, a unique case in this family of 1,500 species.)

Species 12, in cold parts of all continents. Members of this genus belt the world, from Eur. Alps, by Thibet, Himalayas, Siberia, Arctic regions, to Chili, Patagon. and N. Zeal.

KEY TO THE SPECIES.

A. Leaves narrow-linear, acute, margin pectinate-spinulose. Peduncle short. *lycopodioides.*
A2. Leaves ovate-obtuse, rather small, similar.
b. Forming cushions. Leaves ciliate, silvery. Flowers sessile. *glebaria.*
b2. Branches crowded. Peduncle as long as the leaves. *patagonica.*
A3. Leaves ovate-linear, acute, pectinate-ciliate, all similar. Flowers sessile. *pectinata.*
A4. Basal leaves spatulate-linear, fleshy, hispid to ciliate. Stem-leaves scanty or none. Flowers racemed. *pusilla.*
A5. Leaves small, triangular-ovate; stem-leaves smaller; large leaves enclosing the solitary flower. Peduncle short. *pycnophylloides.*

1. BRAYA GLEBARIA Speg.

Robust perennial with rather large *caudex*, and crowded branches making hemispherical cushions. *Leaves* densely imbricate, small, ovate, obtuse, all isomorphous, densely fimbriate-ciliate on their margin, cinereous silvery. *Flowers* largish, acrogenous, solitary, sessile. *Sepals* elliptic-elongate, oblong-obtuse, glabrous, saccate and green at the base. *Petals* ochroleucous, exceeding the sepals, spatulate. *Silicles* unknown.

Chubut, in basalt rocks near Lago Musters and Choique-lauen.

2. B. LYCOPODIOIDES Speg.

Subdichotomously branching, creeping, erect at apex. *Leaves* rather large, narrow-linear, acute, coarsely keeled, the margins aculeolate-pectinate, all similar. *Flowers* apical. *Silicle* rather large, obovate to broad lanceolate. *Peduncle* not exceeding the uppermost leaves.

S. Patagon., on dry plains near Rio Chico de Sta. Cruz; between San Julian and Rio Deseado.

B. LYCOPODIOIDES CONTRACTA Speg.

Branches short and densely crowded. By Rio Deseado.

3. BRAYA PATAGONICA Speg.

Branches short, erect, crowded. *Leaves* rather small, ovate, obtuse, all similar. *Silicle* mediocre, broad-elliptical. *Peduncle* slightly surpassing the highest leaves.

Patagon. On dry table-land at Karr-aike, by Lago Argentina.

4. B. PECTINATA Speg.

Cespitose-crowded, compact, forming hemispherical cushions. *Leaves* rather large, ovate-linear, acutish, dorsally convex, not or obsoletely subcarinate, their margins pectinate-ciliate, all isomorphous. *Flowers* apical, solitary, subsessile; *sepals* green, subgibbous at base; *petals* white. *Silicles* unknown.

S. Patagon., in rocks near Ultima Esperanza.

5. B. PUSILLA A. Gray.

The root sends up simple shoots, with radical spatulate, linear *leaves*, somewhat fleshy, hispid or ciliate on the margins. *Stem-leaves* scanty or none. *Raceme* 5–6-flowered. *Siliques* linear or linear-oblanceolate, twice as long as the pedicel, about 8 *seeds* in each cell. *Styles* very short.

Patagon. Cordilleras, in deep snow. J. B. Hatcher in S. Patagon. (?)

6. B. PYCNOPHYLLOIDES Speg.

Dense; the branches short, erect. *Leaves* very small, triangular-ovate, the cauline smaller and silvery; the subfloral broader, pale. *Flowers* solitary, terminal, on short pedicels; girdled by a cup of leaves. *Silicles* rather small, obovate-lanceolate.

Patagon., in dry precipices at Orr-Aike, near Lago Viedma.

22. HESPERIS Linn.

Erect, perennial or biennial herbs, with forked *hairs*, simple *leaves* and large *racemose*, purple or white *flowers*. *Stigma* with 2 erect lobes. *Siliques* elongated, nearly cylindric, with 1-nerved valves. *Seeds* in 1 row in each cell, wingless. *Cotyledons* incumbent.

Species 20, Eurasiatic.

H. MAGELLANICA (Pers. sub *Brassica*; Hook. f. sub *Sisymbrium*) O. Ktze.

Erect, branching above. *Leaves* ovate-oblong, acute, pinnately lobed, attenuate-petiolate, the lobes sinuate-dentate, acute. *Racemes* corymbose,

becoming elongate in fruit. *Pedicels* bractless, spreading. *Siliques* sub-erect, terete, linear-oblong, attenuate to a short style, rather short, bearded with stellate *hairs*. *Septum* 1-nerved. *Seeds* many, oblong, rufous, sulcate.

Patagon., at Cabo Negro; Magellan; Fuegia, a steppe-plant (Dusén) "Glabrous," Hook. f.; "Plant covered with stellate hairs," O. Ktze.

Family 45. Capparidaceæ. Caper Family.

Mostly herbs with alternate, simple or palmate *leaves* and 4-merous regular, hypogynous *flowers*. *Petals* free, sessile or clawed, rarely none. *Stamens* 6 or more, not tetradynamous, hypogynous. *Ovary* sessile or stiped, 1-celled, or falsely 2–8-celled. *Ovules* many, on parietal *placentæ*. *Fruit* a capsule or berry.

Species 300, chiefly in warm countries.

ATAMISQUEA Miers.

Rigid, branching shrub, lepidote. *Leaves* linear, oblong, small. *Flowers* solitary or paired, terminal, with slender pedicels. *Sepals* 2, ovate, valvate, and 2 inner small. *Petals* 4, unequal, linear. *Stamens* 6, with 3 or 6 staminodes. Dry stipitate *berry*, 1–2-seeded.

Only species:

A. emarginata Miers.

Leaves emarginate at both ends, green above and shining; hirsute and hoary below.

(*Capparis atamisquea* by O. Ktze., who says "non *Capparis emarginata* auct." and that there are species of *Capparis* with few stamens; which character is therefore not a sufficient ground for a separate genus.)

(Chili; Argentina); Patagonia, rather rare in shrubberies along Rio Negro. *Mata negra* of the inhabitants; its wood in burning emits a smoke that is hurtful to both eyes and nose.

Family 46. Resedaceæ. Mignonette Family.

Herbs with unsymmetrical, 4–7-merous *flowers* and alternate *leaves* having glands for stipules. *Terminal racemes or spikes. Calyx-leaves* narrow, and petals unequal, mostly laciniate. Hypogynous *disk* bearing

the 3–40 *stamens*. *Capsule* 1-celled, with parietal *placentæ*, 3–6-lobed and horned, opening apically before the reniform seeds are ripe.

Species 70, chiefly in the Mediterranean region.

RESEDA Linn.

Small *spikes* or contracted *racemes*. *Petals* 4–7-cleft, unequal. *Stamens* 12–40, on one side of the flower.

Species 55.

R. ODORATA Linn. Mignonette.

Leaves cuneate, 3-lobed with obtuse lobes, or entire. *Petals* deeply partite, longer than the sepals. *Capsule* slightly contracted at the mouth, *Seeds* large. *Flowers* fragrant.

(North Afr. & cult.)

R. ODORATA PILOSA O. Ktze.

Stems subpilose.

Patagonia (M. & T.; only cult. or escaped).

Family 47. DROSERACEÆ. Sundew Family.

Glandular pubescent herbs mostly with rosulate *leaves*, their *glandular hairs* sensitive; and perfect flowers, usually in *racemes*. *Caylx* 4–8-merous; *petals* 5, hypogynous, convolute, distinct, or nearly so. *Stamens* 4–20. *Ovary* 1–3-celled; *styles* 1–5. *Seeds* numerous; *endosperm* fleshy.

Species 125, widely distributed.

DROSERA Linn.

Bog-herbs, with 4–8 *stamens*, 1-celled *ovary*, and glandular-pilose *leaves*. *Styles* usually 3.

Species 110, nearly cosmopolitan; most in Australia, but none in the Pacific Is.

D. UNIFLORA Willd.

Minute, *stemless*. *Leaves* rosulate, spatulate, with rounded lamina. *Scape* short, strong, 1–more-flowered. *Flowers* showy. E. and W. Magellan. Falklands. Staaten I., S. Fuegia. (Bolivia.)

D. uniflora W., *D. arcturi* Hook., and *D. stenopetala* Hook., appear to J. D. Hooker to be three single-flowered species, representing each other in extreme southern regions, being found in Patagonia, Auckland Island, and Tasmania.

Family 48. Crassulaceæ. Stonecrop Family.

Mostly succulent herbs or shrubs, with simple exstipulate *leaves* and cymose or solitary regular and perfect, 4–5-merous *flowers*. *Stamens* hypogynous, as many as the sepals, or twice as many. *Floral* symmetry otherwise complete. *Seeds* in the *follicles* numerous, with fleshy *endosperm*.

Species 300, widely dispersed.

CRASSULA Linn.

Leaves opposite, entire, mostly glabrous. *Flowers* symmetrically 4–5 merous. *Calyx* and *stamens* shorter than the corolla. *Petals* free or united at base. *Follicles* distinct.

Species 120, most in S. Africa and Chili; some in Eur. and N. Amer., Orient., Austral. and N. Zeal.

The Patagonian species are chiefly of the section *Tillæa*, taken by some as a genus, having sagittate leaves.

1. C. magellanica (Wild.).

Stem creeping. *Leaves* oblong, imbricate.

Magellan.

2. C. moschata Forst. (d'Urv. sub *Bulliarda; Tillæa* DC.).

Small, creeping, aquatic annuals, with opposite, succulent, ovate-oblong, connate *leaves;* and sessile 4-merous *flowers* in the upper axils.

N. Patagon., at Rio Negro; E. and W. Magellan; Fuegia to Cape Horn; Falklands; also in Kerguelen-land; "always growing near the sea, where streams enter."

3. C. peduncularis Succ.

Stem erect, simple. *Leaves* subconnate, lanceolate, acute. *Pedicels* axillary, solitary, twice or three times as long as the leaves. *Carpels* truncate at apex.

(Moist regions about Buenos Aires and Monte Video); N. Patagon., by Rio Negro.

4. C. tillæa (Miers) (*Tillæa minima* Hook. & Arn.).

Annual, with slender, subsimple *stem*, naked below. *Leaves* ovate, connate, acute or subobtuse, thickish. *Flowers* subsessile, and peduncled,

4-merous. *Calyx-segments* ovate, acute, exceeding the petals. *Follicles* 1–2-seeded.

(Calif., Chili); N. Patagon.

Family 49. SAXIFRAGACEÆ. Saxifrage Family.

Herbs or shrubs, with exstipulate *leaves*, and regular, mostly perfect, and mostly perigynous or superior *flowers*, with *stamens* as many or mostly twice as many as the petals; and the *carpels* are usually fewer (mostly 2), connate below, with diverging apex and *styles*. *Fruit* a capsule or berry. *Seeds* numerous, with copious endosperm. (Occasionally apetalous.)

Species 600, chiefly in cold and temperate regions.

KEY TO THE GENERA.

A. Herbs or shrubs of varying habit. Leaves mostly alternate, extipulate. Flowers 5-, rarely 4-merous. Carpels 2, rarely 3–4, partly connate, 1–2-celled, usually more or less inferior.
  b. Stamens hypogynous or perigynous or epigynous; in the last case separate from the style.
    c. Placentæ central. Leaves entire or lobed, or palmately parted, sometimes with stipuliform growths. Petals narrow below. Stamens usually 10. 1. *Saxifraga*, p. 457.
    *c*2. Placentæ parietal. Floral disk circular, adnate to the ovary. Petals none. Small marsh plants. Stamens 8–10 (rarely 4–5). 2. *Chrysosplenium*, p. 460.
  *b*2. Stamens 2–3, epigynous, on a disk close to the style. Small cespitose plants, with thick linear leaves and terminal flowers. 3. *Donatia*, p. 460.
*A*2. Woody plants with simple, mostly opposite leaves, and 5–4-merous flowers (the stamens twice as many) in corymbs. Ovary more or less inferior, 3–5-celled. Marginal flowers sterile, with enlarged, showy sepals. Fruit a capsule. Styles 3–5, free. 4. *Hydrangea*, p. 460.
*A*3. Woody plants with simple, alternate, often coriaceous and glandular, serrate leaves. Stamens as many as the petals. Ovary with many erect seeds.
  b. Ovary superior, 3-celled. Petals contorted. Creeping branched shrub, with short densely-leafy branches and spatulate leaves having trigonal points. 5. *Tribeles*, p. 461.
  *b*2. Ovary inferior, 3–2-celled. Petals long, imbricated. Trees or shrubs with coriaceous leaves. 6. *Escallonia*, p. 461.
*A*4. Shrubs with simple, often lobed, alternate leaves; racemose flowers, and inferior, 1-celled ovary, with 2 parietal placentæ; becoming a berry. 7. *Ribes*, p. 465.

1. SAXIFRAGA Linn., Saxifrage.

Chiefly perennial herbs, with 5-merous flowers, stamens 10 (very rarely 5). Ovary 2-celled, the apex and styles diverging. Seeds with axile placentation.

Species more than 200, mostly N. Temp. and Arctic; a few in the Himalayas, China, Orient, Algeria, the Andes and Patagonia.

KEY TO THE SPECIES.

A. Scape 1-flowered.
  b. Stamens 5.
    c. Leaves orbicular-spatulate, 3–5-nerved. *alboffiana.*
    c2. Leaves narrow-linear-spatulate, 1-nerved, apically bicuspidate. Petals 5–10. *bicuspidata.*
  b2. Stamens normally 10. Petals long.
    c. Radical leaves trifid; cauline undivided, linear. *cæspitosa.*
    c2. Leaves spatulate, rarely 3-lobed. *S. cæspitosa magellanica.*
A2. Flowers corymbose to paniculate. Lower leaves cuneately 3-cleft; upper often entire. Stigmas large. *cordillerarum.*

1. SAXIFRAGA ALBOFFIANA F. Kurtz.

Low, green, glabrous. Roots numerous, long and slender, stoloniferous. *Stems* 1–2 cm. high, branching little, apically rosulate. Flowering stems higher, few-leaved, 1-flowered, with rhomboid, ovate bracts. *Leaves* orbicular-spatulate, entire, with 3–5 nerves converging upwards. *Petals* 2–3, unequal, lingulate, whitish, minute. *Stamens* 5, shorter than the calyx. *Seeds* reniform.

Fuegia at Ushuaia, alpine; W. Magellan, Desolation I. (Dusén).

2. S. BICUSPIDATA Hook. f.

Laxly cespitose, glabrous. *Stems* decumbent, slender, sparingly branching, leafy. *Leaves* 4–8 mm. long, narrow-linear-spatulate, 1-nerved, apically bicuspidate. *Peduncle* axillary, naked, 1-flowered. *Calyx-lobes* apically bifid. *Stamens* 5. *Petals* 5–1(–0). *Calyx* semisuperior.

FIG. 73.

Saxifraga bicuspidata. Young shoot, showing the scattered, bicuspidate leaves. (Original.)

W. Magellan, at Puerto Angusto (Dusén); S. Fuegia, Patagon. (Of habit of *S. oppositifolia* L. of Greenland, except its scattered leaves (Fig. 73). The figure in *Flora Antarct.* incorrectly gives its leaves as opposite.) By Hatcher in Cordilleras of S. Patagon. Determined by the Kew Herbarium, with the following note: "Add to description in Fl. Antarct. ii. 281, Petalum unicum, oblongo-lanceolatum, acutum, 2 mm. longum, 0.5 mm. latum. T. A. Sprague, Nov. 30, 1901."

3. SAXIFRAGA BICUSPIDATA PAVONII (Don).

Cespitose. *Stem* 3–5-flowered. Lower *leaves* deltoid-cuneate, trifid.
S. Patagon.; Mts. near Lago Argentino.

4. S. CÆSPITOSA Linn.

Radical *leaves* crowded, trifid; cauline distant, undivided, linear. *Stem* 1-flowered. *Ovary* inferior, viscid. Pubescence short, glandular. *Calyx-lobes* obtuse; *petals* obovate, elongate.
(Arctic and alpine Eurasia and N. Amer.)

S. CÆSPITOSA BRACHYPHYLLA Wedd.

Scapeless. *Leaves* smaller than in the type, all shortly trifid, the limb densely villous. *Inflorescence* 1–3-flowered, subsessile amid the uppermost leaves of the caudex.
Patagon.

S. CÆSPITOSA MAGELLANICA (Poir) Wedd. (*S. cordillerarum magellanica* Poir.)

Stems cespitose, procumbent. *Leaves* spatulate, rarely 3-lobed at their apex. Flowering branches short, axillary, naked, 1-flowered. *Calyx* glabrous, its lobes linear-obtuse to obovate, much shorter than the petals. *Root* perennial.
Patagon., Chubut; Magellan (Hatcher, Speg.); Fuegia, passim (Dusén).

4. S. CORDILLERARUM Presl. (*S. exarata* Hook. f.)

Cespitose; somewhat pilose-viscid. *Upper leaves* often entire; *lower* cuneately 3-cleft, thick-nerved. *Calyx-lobes* ovate-oblong, shorter than the tube. *Petals* ovate, nervous, white, exceeding the calyx. *Stigmas* large, subspatulate.
(Eur., Alps; Peru.) Magellan (R. O. Cunningham); S. Patagon., in Cordilleras (Hatcher); Fuegia, on mts.

S. CORDILLERARUM BREVISCAPA (Hook. f.).

Densely cespitose. The *flowers* subsessile.
Magellan. Fuegia, to nearly 2,000 m.

2. CHRYSOSPLENIUM Linn.

Low semiaquatic herbs with petiolate, broad, crenate *leaves*, and perfect, minute, greenish flowers. *Calyx-tube* obconic, adnate to the ovary. *Petals* none. *Stamens* 8–10 (rarely 4–5). *Ovary* 1-celled. *Styles* 2.

Species 15, in N. Temperate region, and Extra-trop. S. Amer.

1. C. MACRANTHUM Hook.

Creeping, glabrous. *Leaves* opposite, ovate-cordate, obtuse. *Peduncles* terminal, bracted, 3-flowered. *Flowers* rather large, 2–3-carpellary, the mid-flower sessile.

E. & W. Magellan; Fuegia to Cape Horn.

2. C. VALDIVIANUM Hook.

Creeping, glabrous. *Leaves* opposite, oblong-rotundate, obscurely sinuate, subtruncate at base.

(Valdivia, in Chili); Fuegia, near Cape Horn.

3. DONATIA Forst.

Mosslike, cespitose herbs, glabrous and fleshy, with short, compact branches, narrow, alternate, imbricating entire *leaves*, and white, solitary, sessile, terminal *flowers*, often unisexual. *Calyx-tube* adnate, bearing a subulate bractlet and remote subulate segments. *Petals* about 8, linear, white, inserted on the calyx-tube. *Stamens* 2–3 (–4) epigynous, extrorse. *Styles* 2–3, stigmas globose.

Species 2, one in Tasmania and N. Zeal., the other in S. Chili to Cape Horn.

D. FASCICULARIS Forst.

Stamens 3, alternating with 3 diverging styles.

(Fig. in Eng. & Prantl, iii. 2a. p. 67, A–C.)

S. Chili; Chonos Archip. Fuegia. "Abundant as a *bog-plant*, in green patches, having with it *Acæna pumila*, *Gentiana patagonica* or *G. gracilis*, *Drosera uniflora*, and *Tetroncium magellanicum*." "*Fruit* capsular, rather fleshy; circumscissile, with few (1–3) globose *seeds* in each locule." (Speg.)

4. HYDRANGEA Linn.

Shrubs or trees, with opposite, simple *leaves*, 4–5-valvate *petals*, 8–10 *stamens*, inferior *ovary* and capsular *fruit*. *Some of the flowers* may be

sterile and *apetalous*, with showy, petaloid calyx-divisions, chiefly in the margins of the corymbs.

Species 35, Himalayas, E. N. Amer. and S. Amer.

HYDRANGEA INTEGERRIMA (Hook. & Arn. sub *Cornidia*).

Large tree, with *evergreen*, coriaceous entire leaves; and no sterile flowers. *Carpels* 3, becoming separate; *seeds* minute, numerous. Branches with special involucre.

S. Chili to Chronos Archip.

H. SCANDENS.

Climbing shrub.

W. Patagon. (Dusén.)

5. TRIBELES Phil. (*Chalepoa* Hook. f.)

Creeping, smooth shrubs, with short leafy branches, and alternate, imbricating *leaves*, 3-angled at the apex. *Flowers* small, white, terminating the branches (solitary or racemose?). *Petals* 5; *stamens* 5, hypogynous, *anthers* globose, extrorse. *Carpels* 3, united in a superior, indehiscent *ovary*.

Only 1 species, viz:

T. AUSTRALIS Phil. (*Ch. magellanica* Hook. f.)

Leaves evergreen, oblong-cuneate, 12 mm. long, a tuft of dry ones at base of the branchlets, and of green ones at the apex; tip of leaves 3-toothed.

(S. Chili); Patagon., Fuegia to Cape Horn.

T. philippi (Hook. f. sub *Chalepoa*) is only a synonym of *T. australis*. It differs by the length of the peduncle, which is given as only 6 mm. in *T. australis* and as 10–15 mm. in *T. philippi;* but the flowers are nearly sessile in their early stages. (Franchet.)

This genus once referred to Pittosporaceæ is now separated, because of the absence of resin-ducts, and is placed in Saxifragaceæ because of its likeness to *Escallonia*. (Engl. & Prantl.)

6. ESCALLONIA Linn.

Trees or shrubs with angled branches, and alternate, evergreen *leaves*, and *5-staminate, 1-styled flowers*, having a 2–3-celled inferior *ovary*.

Species 50, in the Andes and S. Brazil.

KEY TO THE SPECIES.

A. Leaves narrow. Flowers chiefly axillary.	
b. Leaves linear. Stems procumbent. Racemes long.	*uliginosa.*
b2. Leaves linear-lanceolate. Branches glabrous.	*alpina.*
b3. Leaves small, lanceolate, serrate. Branches winged and ciliate.	*pterocladon.*
b4. Leaves small, spatulate-lanceolate, serrulate. Young branchlets angular.	*rosea.*
A2. Leaves spatulate-obovate. Flowers solitary, terminal.	
b. Petals long and narrow.	*serrata.*
b2. Petals obovate. Old leafless branches spinelike.	*virgata.*
A3. Leaves elliptic-obovate, crenate-serrate, large. Flowers large.	*macrantha.*
A4. Leaves mostly obovate.	
b. Flowers terminal, solitary. Glabrous shrub.	*berberidifolia.*
b2. Flowers terminal, in 2–7-flowered racemes, red.	*rubra.*
b3. Flowers in terminal panicles, pink. Branches pubescent.	*littoralis.*
b4. Flowers few in panicles; pedicels and calyx glandular, red.	*rahmeri obovata.*
b5. Flowers crowded on branchlets. Glabrous shrub.	*carmelita.*

1. ESCALLONIA ALPINA Poepp. & Endl.

Undershrub. Branches glabrous. *Leaves* linear-sublanceolate, acuminate both ways, rarely serrate, crowded, 17 by 30 mm. *Flowers* solitary on short pedicels in the upper axils, aggregate to an ovate *raceme*. *Calyx-limb* 5-cleft, sinuses obtuse, lobes acute. *Petals* obovate, with obscure pinnate venation, shortly clawed.

(Mts. of Chili); Patagon.

2. E. BERBERIDIFOLIA H. B. & K.

Glabrous with spreading branches. *Leaves* obovate, rather obtuse, crenulate-toothed, reticulately venous. *Flowers* terminal, solitary. *Calyx-lobes* entire. *Petals* subspatulate.

(Andes of Peru, etc.); S. Patagon., by Lago Argentino; Chubut, in elevated shrubberies.

3. E. CARMELITA Meyen.

Glabrous; profusely branching. *Leaves* obovate-elliptical, subacute, serrulate. *Flowers* crowded in small, flowering branchlets. *Petals* oboval, with long claws.

(Chili); Patagon., Chubut, in mountain shrubberies. Sterile specimens having ends of branches mostly strobilaceously thickened.

4. E. LITTORALIS Phil.

Stem 5 meters tall, branches erect, the younger pubescent. *Leaves* obovate, obtuse or acute, attenuate-petiolate, serrate or subcrenate, res-

inous-punctate below, or rough on the midrib; 5 cm. long. *Flowers* pink, in terminal panicles. *Pedicels* rough-glandular. *Calyx* dilated, its teeth short. Petals long-clawed.

N. Patagon., near Valdivia.

5. ESCALLONIA MACRANTHA Hook. & Arn.

Small shrub; the root, stem, and branches *glandular-pubescent. Leaves* large, elliptic-ovate, obtuse, basi-cuneate, crenate-serrate. *Flowers* large. *Calyx-lobes* subulate.

S. Chili to Chonos Archip.

6. E. PTEROCLADON Hook.

Branches high, sinuate-winged, the wings ciliate. *Leaves* small, coriaceous, glabrous, short-petioled, lanceolate-serrulate. *Flowers* nodding, in the axils of leaves, forming secund, leafy spikelike *racemes.* Pedicels short, bracteolate. *Calyx-segments* triangular-subulate. Claws of *petals* forming a tube.

Patagon.

7. E. RAHMERI Phil.

Innovation-branches scarcely puberulous, but *glandular-rough. Leaves* ovate, petiolate, equally acuminate both ways, very serrate and biserrate, basally entire; resinous punctate underneath. *Panicles* few-flowered; pedicels and calyx very glandular; *calyx-teeth* narrow, elongate; *petals* oblong-spatulate, red.

(Chili, Araucania.)

E. RAHMERI OBOVATA Speg.

Leaves mostly obovate and smaller than in the type.

Chubut, in mountain shrubberies.

8. E. ROSEA Gris.

Shrub, 2–3 m. high. Branches glabrous, the younger angular, rufous, spreading, densely leafy. *Leaves* small, subcoriaceous, glabrous, paler and veiny underneath, short-petiolate, spatulate-lanceolate, serrulate. *Flowers* solitary in the axils of the uppermost leaves, in a simple *raceme.* Pedicels shorter than the calyx, with setaceous *bracteoles. Petals*

linear-spatulate, 6 times as long as the calyx-limb; their *claws* forming a tube.

S. Patagon., valley of Rio Gallegos (Nordenskj.).

9. ESCALLONIA RUBRA Pers.

Glabrous; branches erect, the younger glandular-villous. *Leaves* obovate-oblong, acuminate, serrate, resin-dotted underneath. *Peduncles* 2–7-flowered, terminal, bracted. *Calyx-lobes* toothed. *Petals* spatulate, red, only their tips spreading. (Fig. in Engl. & Prantl, iii. 2a, p. 84.)

(Chili; Argentina); Chubut (Speg.); S. and W. Patagon. (C. Reiche and F. Philippi, *Flora de Chile*, III., include in *E. rubra* Pers. 5 Chilian forms which have been described as separate species, viz., *uniflora*, *poeppigiana*, *multiflora*, *albiflora*, *glutinosa*.)

10. E. SERRATA Smith.

Small glabrous shrub, with clustered *leaves*, which are obovate or spatulate, obtuse, serrate, veinless below, except the midrib. *Flowers* solitary, terminal; *calyx-lobes* triangular-acute. *Petals* oblong, linguæform.

Patagon., E. and W. Magell., to Cape Horn.

11. E. ULIGINOSA Phil. (O. Ktze. sub *Cynoglossum*).

Rather glabrous. *Stems* elongate, procumbent, branching. *Leaves* linear, sparsely appressed-setulose. *Racemes* elongate. *Pedicels* at length equalling the hispid calyx. *Corolla* milky, 6 mm. diam.

(Chili, Colchagua.)

12. E. VIRGATA Pers. (*E. stricta* Rem.)

Leaves obovate-spatulate, serrulate. *Peduncles* subterminal, 1-flowered. *Calyx* toothed, the teeth acute, marginally glandular. *Petals* obovate. The *older branches*, becoming defoliated, resemble spines.

(Chili); S. Patagon., by Lago Argentino; Cordillera; Chubut, in mountain shrubberies.

7. RIBES Linn. Gooseberry, Currant.

Shrubs, with alternate, lobed *leaves*, and 4–5-merous *flowers*, the *petals* and 4–5 *stamens* perigynous. *Ovary* 1-celled, becoming a *berry*, crowned by the *persistent calyx*. *Styles* 2, these sometimes branched.

Species 60, from Himalaya by E. Asia and Siberia to W. Amer., and by the Andes to Patagon. Not native in Australasia.

1. RIBES CUCULLATUM Hook. & Arn.

Unarmed, with glabrous branches. *Leaves* glabrous, about 5-lobed, round-reniform, cuneate and cucullate at base, the lobes mutually incumbent, acutely incised-lobate. *Petiole* nearly as long as the leaf. *Raceme* scarcely puberulous, axillary, short, few-flowered. *Flowers* subsessile, scarcely exceeding the roundish *bracts*.

(Chili); W. Patagonia, by Rio Aysen (Dusén); S. Patagon.

2. R. EBRACTEOLATUM Spach. (*R. alpinoides* Domb.)

Leaves ovate to ovate-oblong or subrotund, coarsely crenate-serrate or dentate, deeply 3-lobed, basitruncate or cuneate, or subcordate. *Racemes* (sterile) 3–5 cm. long, rather lax; *pedicels* very short, ebracteolate. *Calyx-lobes* half as long as the tube. *Style* subsimple.

Erect shrub, nearly 2 meters high. *Peduncles* 3 cm. long, with pubescent rachis. *Bracts* 6–8 mm. long, the lower exceeding the flowers; but no *bracteoles* on the pedicels.

Patagon.

3. R. GLANDULOSUM Ruiz & Pav.

Leaves cordate, obtusely 3-lobed, biserrate, rugose. *Racemes* short. *Calyx* glandular-pubescent.

(Andine region); Chubut, in mountain shrubberies.

4. R. LACARENSE Phil.

Leaves with suborbicular laminæ (8–9 mm. across), subcuneate, 3-nerved or trifid, the lobes obovate, 3-toothed, petioles 4–5 mm. long. *Peduncles* mostly 3-flowered. *Bracts* ovate, orbicular, obtuse, glabrous. *Flowers* sessile, small, glabrous. Sepals acute, pink. Berries purple.

Near Lago Blanco, Chubut.

5. R. MAGELLANICUM Poir.

Unarmed, puberulous. *Leaves* ovate, or broad-ovate-rotundate, truncate at base or cordate, 3-lobed, coarsely biserrate, the younger grandular, the older smooth, save the nerves underneath. *Racemes* many-flowered,

at first pendulous, elongate and usually erect in fruit. Pedicels short; *bracts* ligulate, as long as the flowers. *Calyx-lobes* obtuse. *Petals* small, reflexed at apex. *Berries* red, agreeable. ("Fruit black," Speg.)

Patagon., by Lago Nahuel-huapi; Punta Arenas (J. B. Hatcher); over all Fuegia to Cape Horn. In Chubut a *variety* with smaller *leaves*, subhastate triangular. (Speg.)

Family 50. CUNONIACEÆ.

Shrubs or trees, with opposite or whorled stipulate *leaves* and *small flowers* in heads or racemes; the *flowers* mostly perfect, with a hypogynous *disk*, and 5- rarely 4-merous *calyx* and *corolla; stamens* mostly twice as many and perigynous, on a disk. *Carpels* few, mostly 2. *Fruit* usually a 2-lobed capsule. *Seeds* numerous, in 2 ranks, sometimes hairy or winged. *Embryo* small, in large endosperm.

Species 120, chiefly in the Southern hemisphere. *Weinmannia* and its relatives, having woolly seeds which are carried in birds' feathers, are widely dispersed in places south of the equator. The others are confined to a narrow region; as New Caledonia, and E. Australia. The Brazilian genus *Belangera* is closely allied to the Malay-Caledonian *Geissois* (Engler). In this last case the migration must have been toward Brazil.

PATAGONIAN GENERA.

Low trees with small white flowers.

a. Racemose. Calyx-lobes imbricate. Seeds hairy. Leaves odd-pinnate. 1. *Weinmannia*.

aa. Panicled. Calyx-lobes valvate. Seed-coat membranaceous. Leaves simple. 2. *Caldcluvia*.

1. WEINMANNIA Linn. (1759). (*Windmannia* P. Br., 1756.)

Leaves opposite, coriaceous, petiolate, simple or trifoliolate, or pinnate, with the leaflets glandular-serrate, and the rachis often winged. *Stipules* deciduous. Simple *racemes* of small, white flowers, hermaphrodite or polygamo-dicœcious. *Calyx-tube* short, its lobes imbricate. *Seeds* mostly with hairs, sometimes woolly.

Species 70, trop. and subtrop., of S. Amer., with solitary species in Austral., N. Zeal., the Mascarene and Pacific Is.

W. TRICHOSPERMA Cav.

A low tree, with odd-pinnate *leaves*; leaflets 5–6 pairs, oblong-serrate; rachis with semirhomboid *wings*. *Stipules* ovate, deciduous. *Racemes*

few-flowered, nearly as long as the leaf. Terminal leaflets 14 mm. long.
N. Patagon.; Chiloe I. (Chili; Peru). Chubut, by Carren-leofú.

2. CALDCLUVIA Don.

Low tree, with terete, opposite *branches*, these, the petioles and the inflorescence tomentillous. *Leaves* simple, opposite, coriaceous, petiolate, oblong-lanceolate, gland-serrate, nervose, with large, leafy subfalcate, serrate *stipules*. *Flowers* small, white, 4–5-merous; in large, long-peduncled, densely flowered, axillary panicles, *calyx* 4–5-partite, with valvate lobes. *Petals* inserted under a hypogynous disk; lance-linear, unguiculate. *Stamens* 8–10 exsert, anthers didymous. *Ovary* free, 2-celled, 2-beaked and styled. *Ovules* numerous, pendulous. *Embryo* in axis of fleshy *endosperm*.

Only species.

C. PANICULATA (Cav.) Don.

(Chilian thickets); W. Patagon.
Characters of genus.

Family 51. ROSACEÆ. The Rose Family.

Trees, shrubs or herbs, commonly with alternate, *stipulate leaves*, and regular, perfect *flowers*. *Calyx* free from, or adnate to, the ovary, 5-(rarely 4–9-)lobed, sometimes with *bracteoles*. *Petals* as many, perigynous, or rarely none. *Stamens* mostly numerous, perigynous. *Carpels* 5–many, rarely fewer, distinct or connate. *Fruit* achenes, drupes, or pomes. *Seeds* normally without endosperm.

Species 1,200, cosmopolitan.

KEY TO THE GENERA.

A. Carpels 5–2 (or 12–1) verticillate, either on a special receptacle or immersed in the persisting axis, each with 2–∞ seeds. Filaments from a broad basis, smaller upwards. Sepals often obsolete. Fruit of follicles free or connate. Seeds wingless, coriaceous or wrinkled. Stamens perigynous. Mostly shrubs. 1. *Spiræa*, p. 468.

*A*2. Carpels 5–2, connate with the inner wall of the hollow, floral axis, and with each other, becoming in fruit a fleshy pome.

b. Carpels several seeded, the seeds in two series. 2. *Cydonia*, p. 468.

*b*2. Carpels 2-seeded. Floral axis pyriform to globular. 3. *Pyrus*, p. 469.

*A*3. Carpels few or many, on a disk, distinct, each 1–2 ovuled, becoming 1-seeded achenes or drupelets.

b. Floral axis flat or convex. Filaments narrowing from a broad base.

c. Carpels 2-ovuled, becoming a mass of drupelets. No outer calyx.
4. *Rubus*, p. 469.

*c*2. Carpels 1-ovuled, becoming achenes. Mostly an outer calyx.

d. Seeds pendulous. Achenes nut-like; style deciduous.

e. Carpel-bearing receptacle becoming large and juicy. 5. *Fragaria*, p. 470.

*e*2. Carpel-bearing receptacle little enlarged in fruit, dry and colorless.
6. *Potentilla*, p. 470.

*d*2. Seeds erect. Style usually persisting. Flowers 5-merous. Receptacle flat.
7. *Geum*, p. 471.

*b*2. Floral axis goblet-shaped, completely enclosing the 2–more carpels, usually hardening in fruit. Filaments with slender base, not narrowing above. Sepals 4, rarely 3 or 5. Petals none. Stamens sometimes few or 1–2; carpels few.

c. Outer calyx leaves 4–5, alternating with the sepals. Style basal. Carpels 1–4. Leaves broad, simple, usually lobed. 8. *Alchemilla*, p. 472.

*c*2. No outer calyx, nor petals. Floral axis spiniferous in fruit, but not a circle of spines. Leaves often pinnately divided.

d. Spines small and short, 1 under each sepal. Carpel 1. Flowers small, solitary, axillary. Fruit a white berry. Small shrubs. 9. *Margyricarpus*, p. 473.

*d*2. As *Margyricarpus*, but fruit dry, 4-winged. 10. *Tetraglochin*, p. 474.

*d*3. Spines on the angles of the fruit, or only 1 strong barbed spine under each sepal. Carpels 2. Flowers in erect spikes or heads. Mostly herbs.
11. *Acæna*, p. 475.

*A*4. Carpels solitary, not adnate to the hollowed receptacle. Styles terminal. Ovary with 2 pendulous ovules, becoming a drupe. Trees or shrubs, with simple stipulate leaves.
12. *Prunus*, p. 485.

1. SPIRÆA Linn.

Shrubs or herbs, usually with pinnately divided *leaves*, and racemose or paniculate, perigynous *flowers*, 4–5-lobed *calyx*, 4–5 *petals*, and 20–60 *stamens*, with didymous *anthers*. *Carpels* 1–8, mostly 5, not united. *Ovules* 2–many. *Follicles* usually dehiscing by one suture.

Species 60, chiefly in N. Temperate parts of Old World; a few in W. Amer.

S. MAGELLANICA Poir.

Leaves petiolate, exstipulate, lanceolate, unequally serrate, nervose. *Racemes* terminal, subsimple. *Flowers* white.

Magellan.

(The only representative of the genus in the S. Hemisphere. *S. argentea* is in New Granada.)

2. CYDONIA Tourn. Quince.

Beautiful shrubs, with simple, deciduous *leaves* and large, scarcely peduncled *flowers*. *Stamens* 20 or more. *Carpels* 5, with numerous seeds

in 2 rows. *Styles* united at the base. *Fruit* a pome, large, firm when ripe, strongly fragrant.

"Differs from *Pyrus* only by the ovary-cells having several ovules, and the testa, in European species, being mucilaginous." (Benth. & Hook.)

Species 3.

CYDONIA CYDONIA (Linn. sub *Pyrus*) Karst. (*C. vulgaris* Pers.)

Leaves entire, at first tomentose underneath. *Flowers* standing singly on leafy branches, rather large, mild red. *Calyx-lobes* serrate, persisting on top of the woolly, afterwards smooth, yellowish *pomes*.

(Natives of S. Europe and Orient; and cultivated); Patagon. (doubtless introduced).

3. PYRUS Linn. Apple.

Usually trees, with simple *leaves* and large white or pink *flowers* in simple, terminal *cymes*. *Calyx* adnate to ovary, urn-shaped, 5-lobed. *Petals* 5, rounded. *Ovary* inferior, of 2–5 united carpels, mostly with distinct styles. *Ovules* 2 in each carpel. *Fruit* a pome.

Species 35, N. Temperate Hemisphere.

P. MALUS Linn. Apple. (*Malus malus* Brit.).

Leaves pubescent underneath, subcordate at base. *Pome* globose, 5–8 cm. in diameter, without grit-cells.

Valley of Upper Limay, Patagon., cultivated. Said to have been introduced by Spanish missionaries; it now forms groves and forests, flourishing in N. Patagon., in two varieties, sweet and tart. "Leaves biserrate, velvety beneath." (J. Ball.) "Common in all the preandine region between Lago Nahuel-huapi and Carren-leofú." (Speg.)

4. RUBUS Linn. Blackberry.

Shrubs, mostly prickly, with lobed or pinnate *leaves*, and adnate *stipules*. *Calyx* not bracted, deeply 5-partite, its tube broad. *Fruit* usually consisting of numerous drupelets on an elongated receptacle.

Species 200, N. Temperate; also represented in the Cape, Australia and New Zealand; but very rare in S. Amer., or Fuegia.

R. GEOIDES Smith.

Creeping, with trifid or ternate *leaves*, having a large, ovate terminal lobe, serrate, the lateral lobes small, or wanting, or joined to the terminal.

Peduncle scape-like, 1-flowered, the *flower* yellow, and the *fruit* scarlet and pleasant. "One of the few esculents of these parts."

Magellan; S. Fuegia to Cape Horn. Falklands.

5. FRAGARIA Linn. Strawberry.

Perennial, stemless herbs, propagating by runners, with petiolate, trifoliolate *leaves* having sheathing *stipules*, and white flowers racemed on naked scapes. *Calyx* 5-lobed, with 5 outer bracteoles. *Stamens* many, perigynous. *Achenes* many, on a large pulpy receptacle.

Species 15, N. Temperate Zone of both hemispheres, and the Andes.

F. CHILENSIS Ehrh.

Rootstock large. Densely silky, except on the upper surface of the short-petioled *leaves*. *Leaflets* orbicular-ovate, or obovate, coarsely crenate, their teeth cuspidate.

(Chili): Chonos Archip., and Northwards; Patagon., Chubut.

F. VESCA Linn.

Not very villous. *Leaflets* ovate, obtuse, cuneate. Hairs of peduncles widely spreading; of pedicels appressed. *Scape* longer than leaves.

(Eur., nat. in N. Amer.); Fuegia, Ushuaia.

6. POTENTILLA Linn.

Herbs or shrubs, with digitate or pinnate *leaves*, and cymose or solitary, mostly yellow *flowers*. *Calyx-tube* broad, 5-lobed, and 5-bracteolate. (*Flowers* occasionally 4-merous.) *Stamens* numerous. *Achenes* numerous on a dry receptacle.

Species 150, of N. Temperate Zone, with few in S. Amer. The following is introduced.

P. ANSERINA Linn. Silver-weed.

Herb, spreading by runners. *Stipules* membranous. *Leaves* petioled, pinnate; leaflets 7–25, oblong-lanceolate or obovate, obtuse, the lower generally smaller, all serrate; smooth above, silky beneath. *Peduncles* axillary, solitary, 1-flowered. *Petals* broad, exceeding the ovate-acute calyx-lobes. *Achenes* glabrous.

Chonos Archip. and Temperate regions, N. and S.; N. Patagon., very rare by streams near Nahuel-huapi. (Speg.)

7. GEUM Linn.

Perennial herbs, with pinnate or pinnately-divided *leaves*, the basal leaves larger than the others. *Calyx* 5-lobed, with as many bracteoles. *Petals* 5, yellow to purplish, exceeding the calyx, *stamens* numerous, on the calycine disk. *Carpels* numerous, on the dry receptacle. *Style* filiform, sometimes abruptly bent, or plumose in fruit.

Species 36, in temperate zones, N. and S.; some arctic.

Section *Sieversia*, regarded by some as a distinct genus, has the whole style persisting on the achenes.

Key to the Species.

A. Flowers white, small.
  b. Leaves interruptedly pinnatisect; terminal lobe large. Trifid bract subtending the thick pedicel. — *parviflorum*.
  b2. Leaves pinnate; floral leaves in an involucre. — *involucratum*.
A2. Flowers yellow.
  b. Leaves pinnatisect; terminal lobes large. — *chiloënse*.
  b2. Radical leaves interruptedly pinnate. — *magellanicum*. / *urbanum*.

1. G. chiloënse Balb. (*G. chilense* Lindl.)

Leaves irregularly pinnatisect, crenate; the *terminal lobes* rounded, much exceeding the others.

Chili; Chiloe I; N. Patagon., by Lago Nahuel-huapi; by Rio Sta. Cruz; Punta Arenas. (Perhaps a var. of *G. urbanum* L.) "Flowers yellow, subsessile or long-pedicelled." (Speg.)

2. G. involucratum Juss.

Leaves pinnate; the outermost rotundate-crenate. *Floral leaves* as an involucre. *Scape*, 5-peduncled; naked below, and leafy under the subcapitate flowers. *Corolla* white, shorter than the calyx.

Magellan.

3. G. magellanicum Comm. (=*G. urbanum* Index Kewensis; see No. 5 below).

Leaves pinnate; the outermost divisions very large and lobed; the lower very small. *Scape* elongate. It grows with *G. involucratum;* but its lateral leaves are much smaller, and with very small leaves interposed.

S. Patagon.; Magellan; Fuegia.

4. GEUM PARVIFLORUM Comm. ex Smith. (*G. magellanicum* Lech. non Comm., *Sieversia albiflora* Hook. f.)

Stem few-flowered, tomentose. *Leaves* hairy, interruptedly pinnatisect, crenate, the terminal lobe large, rounded, obscurely 5-lobed, the *stipules* dissected. *Pedicels* thickened, with a basal trifid bract. Flowers nodding; calyx-lobes erect, equalling the white petals. *Styles* deflexed, hooked, the appendage as long.

Magellan; Fuegia, alpine at Ushuaia. "Like a small *G. urbanum* but the flowers differ."

5. G. URBANUM Linn. (Including No. 3 supra. *G. magellanicum* Comm.)

Stem branching, hairy, erect. Radical *leaves* quinate-pinnatisect; the cauline ternate-palmatisect; the lobes ovate, crenate-dentate; the uppermost 1-lobed, ovate. *Stipules* large, suborbicular. *Calyx-segments* reflexed. *Petals* ovate, rather large, yellow. *Achenial* head spherical. *Styles* glabrous, hooked.

(N. Temperate Zone and N. Zeal.); Magellan, Fuegia, S. Patagon., at head of Rio Chico. (J. B. Hatcher.)

J. D. Hooker states that the Magellan plant shows great variations; petals of the wild specimens being often yellow, and twice as large as the sepals; while in garden specimens the petals are much larger and red or scarlet. The leaves also differ greatly. Index Kewensis relegates the Magellan and N. Zealand forms to the Old-World *G. urbanum*.

8. ALCHEMILLA Linn. (*Alchimilla* Tournef.)

Herbs, with lobed or digitate leaves, adnate stipules, and small greenish clustered flowers. Calyx cup-shaped, contracted at the throat, 4–5-lobed, 4–5-bracteolate. Petals none. Stamens 1–4, short. Carpels 1–4, styles basal or lateral, becoming achenes enclosed in the persistent calyx.

Species 35, Europe, mountains of Africa and of W. Amer., from British Columbia to Chili.

A. ARVENSIS Sm.

Stems branched, leafy. Leaves trifid, pubescent; lobes cuneate, deeply cut. Stipules large. Flowers sessile, axillary.

(Europe); S. Patagon., by Rio Sta. Cruz.

ALCHEMILLA TRIPARTITA Ruiz & Pav.

Cespitose. Leaves palmately 3–5-partite; their segments cuneiform, incised-serrate, or few-cleft upwards. Stipules sheathing, 2–4-cleft. Flowers cymulose, terminal on the branches. Perigonium 8-cleft, its tube appressed, pubescent, its segments glabrous, the outer 4 smaller. Polymorphous.

(Venezuela and southwards); Patagon., by Golfo de San Jorge, and Rio Sta. Cruz.

9. MARGYRICARPUS Ruiz. & Pav.

Branching shrubs, with crowded, imbricate *leaves* of two forms (some unequally pinnate, rigid or spinescent, enclosing simple leaves in their axils), and having sessile, solitary *flowers* in the axils. *Calyx* 4–5-merous. *Petals* none. *Stamens* 1–2. *Carpel* 1, inferior, 1-seeded. *Fruit* berry-like.

Species 8, in S. Amer., andine.

KEY TO THE SPECIES.

A. Fruit not winged.
- *b*1. Fruit trigonal, not armed; leaflets linear. — *patagonicus*.
- *b*2. Fruit a white berry.
  - *c*. Leaves bipinnate, with spinescent rachis; segments linear. — *pinnatus*.
  - *c*2. Plant more prostrate and robust. Leaflets short, subequal. — *microphyllus*.

*A*2. Fruit with 2 rigid broad wings, and intermediate pointed tubercles. Leaflets woolly. — *clarazii*.

*A*3. Fruits 3–4-winged. Leaves with spinescent petioles. (*Tetraglochin*.)
- *b*. Leaflets small, ovate, setiferous. — (*T. ameghinoi*.)
- *b*2. Leaflets long-oblong, mucronate. Wings of fruit broad. — (*T. alatus*.)
- *b*3. Fruit tetragonal, angles spiniferous. Leaflets minute, subcordate. — (*T. acanthocarpus*.)

1. M. CLARAZII J. Ball.

Small, with leaflets woolly underneath the adnate stipules, fimbriate-ciliate; calyx silky. *Fruit* having 2 rigid pointed *wings*, with 2–3 intermediate, pointed *tubercles*. (The wings twice as large as the diameter of the fruit.)

Patagon. at Rio Chubut and southward.

2. M. MICROPHYLLUS Nied.

Near *M. pinnatus*, but prostrate and more robust. *Rachis* tomentose, rigid, subspinescent. *Leaflets* shorter and more equal.

N. Patagon.

3. MARGYRICARPUS PATAGONICUS Speg. (*M. setosus patagonicus* Speg.)

Prostrate, cespitose shrub, unarmed. Young *branches* long, densely leafy, in the axils of old, dry leaves. *Leaves* glabrous, odd-pinnate; the *leaflets* linear, acute, entire, revolute. *Fruit* trigonal, not winged, obovate, solitary in the axils.

Patagon., by Rio Negro; mouth of Rio Chubut; Golfo de San Jorge; R. de Sta. Cruz.

4. M. PINNATUS O. Ktze. (*M. setosus* Ruiz. & Pav.)

A low, stiff bush with pinnate *leaves*, and linear, pinnate *leaflets*. *Flowers* axillary, inconspicuous. *Fruit* a white berry, edible, at least in some varieties.

N. Patagon., by Rio Negro, and over most of the Andes. "Yerba de la perdiz." The "tinamou" eats it; and the natives call it the Silio Labuez or partridge-remedy. (J. Ball.)

10. TETRAGLOCHIN Poepp. (Sæpissime sub *Margyricarpus*).

Floral axis in the fruit dry, with 4 wings.

Species 3, Chili and Patagonia. (See key under *Margyricarpus*.)

1. T. ACANTHOCARPUS Speg. (*Margyricarpus acanthocarpus* Speg.)

Diffuse, densely branching shrub. Branches apically leafy with dense, glabrous, sheathing leaves, ciliate at their opening, odd pinnate. Leaflets 2–4 pairs, subopposite, minute, glabrous, subcordate, ovate. Flowers in 3's, sessile on apex of the peduncles, not exceeding the leaves, with broad, ovate, ciliate bracts. Sepals glabrous, elliptical-oblong. Fruit coriaceous, hispid-velvety, elliptic or ovate, tetragonal, with stout horizontal reddish spines on the angles.

Over all eastern Patagon. between Rio Chubut and Rio Sta. Cruz and Golfo de San Jorge.

Variable as to leaves, fruit and villosity. Spegazzini gives the following forms or varieties.

(1) *typica;* leaves glabrous; fruits not winged, white.

(2) *macropoda;* peduncles long, otherwise as (1).

(3) *lasiocarpa;* fruit villous, broad-winged.

(4) *dasycarpa;* leaves silky; fruit velvety, winged.
(5) *leiocarpa;* leaves pilosulous; fruit glabrous, winged, spinescent.

2. TETRAGLOCHIN ALATUM Gill. (*T. strictum* Pœpp.)

Fruticose, strict. Petioles very spinescent, broad at base. Young shoots very short, leafy; leaflets basally adnate, long-oblong, mucronate, revolute. Fruit with 3–4 broad, membranaceous wings.

(Bolivia); Patagon. In lofty mountains and pastures of the Andes. The wood is collected by travellers crossing the Andes.

3. T. AMEGHINOI Speg. (*Margyricarpus Ameghinoi* Speg.)

Strict undershrub, with subspinescent, spreading petioles, and short, leafy, axillary branchlets. Petiole very short, with ciliate pericladium. Leaf odd-pinnate, leaflets minute, subopposite, sessile, ovate, sharply setiferous, margin revolute; the lowest remote, entire; the upper approximate, 2–3-partite. Fruits solitary, sessile at the axils, glabrous, shining; 3-winged.

Patagon., by Golfo de San Jorge; Lago Musters; N. Patagon., by Lago Nahuel-huapi.

11. ACÆNA Vahl.

Herbs, often woody at base, glabrous or silky, often with erect scape-like floriferous stems, of the habit of *Sanguisorba*. Leaves unequally pinnate, with adnate stipules. Flowers in heads, or interruptedly spicate, green or reddish, bracted. Calyx-tube constricted at the throat, persistent; calyx-lobes 3–4. Petals none. Stamens 1–3, rarely more, in the calyx-throat. Carpels 2. Fruit-head armed with retrorsely barbed spines. Seed 1 to each flower.

Species 40, characteristic of extra-trop. S. Amer. with outlying species in Mexico, Calif., Hawaii Is., Tristan, S. Africa, S. Austral., Tasmania, and N. Zeal.

KEY TO THE SPECIES.

A. (*Euacæna.*) Flowers in globose or cylindric spikes, with solitary flowers lower on the scape.
b. Plant smooth, shining. *pumila.*
*b*2. Leaves silky-villous. *cupatoria.*
*b*3. Leaves silky on the under surface.

c. Upper surface smooth. Fruit with large and small spines. *platyacantha.*
*c*2. Upper surface pubescent. Fruit glochidiate all round. *sericea.*
*b*4. Plant more or less pubescent.
c. Spines free, glochidiate.
d. Fruits smooth. *andina.*
*d*2. Fruits villous.
e. Leaflets entire or toothed, pubescent-setose.
f. Leaflets coarsely toothed towards the apex. *splendens.*
*f*2. Leaflets usually entire. *integerrima.*
*f*3. Leaflets 7–9 pairs, pinnatipartite; the segments narrow. *myriophylla.*
*c*2. Spines free, prismatic, rigid, basally enlarged.
d. Fruit about midway having 4 short spines. *multifida.*
*d*2. Fruit covered with spines.
e. Plants pubescent-setose, cinereous.
f. Fruits attenuate both ways. *fuegiana.*
*f*2. Fruits oval. Leaflets smooth on upper surface. *cuneata.*
*e*2. Plants green, pubescent or hirsute. Pinnæ pinnatifid.
f. Erect, silky. *pinnatifida.*
*f*2. Cespitose, villous. *pœppigiana.*
*b*5. Lax-pilose. Fruit tetragonal, with tubercles. Stamens 2. *lucida.*
*b*6. Silky. Fruit 3–4-angled, with 2–4 spines and smaller spines between. *trifida.*
*A*2. (*Ancistrum.*) Fruits in globose heads. At maturity each has 2–4 spines.
b. Plants pure green.
c. Leaflets serrate or coarsely toothed.
f. Leaflets silvery on lower surface. *argentea.*
*f*2. Leaflets pubescent or smooth on under surface.
g. Fruits covered by large, stout hairs appressed apexwards. *ovalifolia.*
*g*2. Fruit covered by white villi. *krausei.*
*f*3. Leaflets silky on both surfaces.
g. Fruit with 4 long, divaricate setæ. *cadilla.*
*g*2. Fruit slightly winged, with compressed glochidia. *philippi.*
*c*2. Leaflets pilose, 2-parted, minute. Calyx villous. Fruit unarmed. *parvifolia.*
*c*3. Leaflets 3–5-partite; segments unequal. *magellanica.*
*c*4. Leaflets 11, apically incised. Fruit small, with 4 short glochidia. *alboffii.*
*c*5. Leaflets about 11, pectinate, emarginate. Heads small.
d. Fruit with 4–2 short spines. *nudicaulis.*
*d*2. Fruit with 5 spines. *tenera.*
*c*6. Leaflets 4–6 pairs, pinnatifid, veiny, glabrous. Spines 4, spreading, twice as long as the calyx. (*lævigata*) *venulosa.*
*b*2. Plants glaucous or cinereous.
c. Fruits with spines subequal and yellowish.
d. Fruits smooth. *lævigata.*
*d*2. Fruits pubescent. *adscendens.*
*c*2. Fruits with midspines larger than the others. *macrostemon.*
*b*3. Plants densely pulvinate. Leaves 2–3, white, silky. Fruit with short glochidia all round. *pulvinata.*

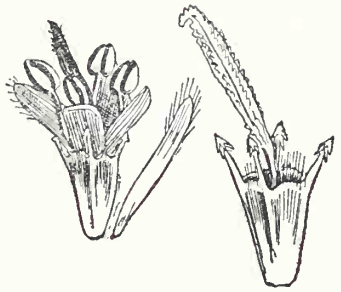
*b*4. Silvery-silky, cespitose. Fruit with short spines. *cæspitosa.*
*A*3. Cespitose-silky. Flowers sexually dimorphous; the females hid in the leaf-axils. Fruit winged, with glochidia and spines. *tehuelcha.*
*A*4. Low. Leaflets 3–4, oblong-serrate, 6 mm. long; fulvous-hairy. *antarctica.*

1. Acæna adscendens Vahl.

Stem long, prostrate, sending up glabrous, leafy branches. *Leaflets* 4–7 pairs, ovate-oblong, obtuse, serrate. *Scape* leafy below, leafless and smooth above (rarely with a bract and glomerule midway); *head* globose; bractlets linear, apex ciliate. *Calyx* glabrous, its lobes oblong, pilose on outside. *Stamens* mostly 4, exceeding the calyx-lobes. *Stigmas* long, subplumose. *Fruit* obconical, with 4 long glochidia.

(Chili); Magellan (by Hatcher at Punta Arenas); Fuegia, passim; Falklands; N. Patagon., at Lago Nahuel-huapi. (Also in Australia and S. Georgia I.)

Fig. 74.



Acæna adscendens.—Flower and bract; calyx with glochidia and stigma: all magnified. (From *Flora antarctica.*)

A. adscendens macrochæta Franchet.

Taller. *Leaves* ovate-elliptical, with long-stalked, terminal part. *Setæ* 4 times as long as the pilose *capsule.*

Magellan; Cape Horn.

A. adscendens coriacea Small.

More robust and elongated than the type. *Leaves* narrower, oblong in outline, short-petioled, rigid; the winged base of the petiole produced into toothed auricles. *Leaflets* smaller.

S. Patagon., at Cape Fairweather, etc.

2. A. alboffii (Alboff sine nomine) Macl.

Low, from thick rhizome, with old *leaves* about the base, branching into floriferous stems and sterile scions. *Stems* low, blackish, few-leaved, apically naked, subglabrous. *Radical leaves* short-petiolate, ovate-oblong, pubescent beneath, once-pinnate, with about 11 leaflets; these small, obovate-cuneate, apically cuneate-incised. *Head* solitary, large. *Stamens* 6. *Styles* long, plumose, blackish. *Fruit* small, *spines* 4, short-glochidiate.

Fuegia, alpine meadows above Ushuaia. N. Alboff.

3. ACÆNA ANDINA Phil.

Thick black *rhizome* bearing rosettes of pinnatipartite *leaves*, the parts pinnatifid, underneath and marginally setaceous. *Flowers* in a head or large spike. *Sepals* setose. *Fruit* glabrous, with subulate *spines*, twice as long as the fruit is broad.

(Chili, near snow); Patagon. (?).

4. A. ANTARCTICA Hook. f.

Low. Stems short, robust, prostrate, ascending, and sparsely branching. *Leaves* crowded, leaflets 3–4, broadly oblong, obtusely serrate, medially channeled, silky-villous above with tawny hairs, pilose underneath. *Peduncle* scapiform.

"I have not met with this small and very distinct species either in flower or fruit." (J. D. Hooker.) (A specimen so named in the Gray Herbarium has the head terminal and subglobular.)

E. and W. Magellan, Fuegia, passim, to Hermite I., and Cape Horn; Staaten I.

5. A. ARGENTEA R. & P.

Erect or ascending. *Leaves* numerous, 4–6 cm. long, with 4–6 pairs of coriaceous, ovate-oblong or lanceolate, serrate leaflets, dull green and smooth on upper surface, silvery-silky beneath. *Head* globose. *Bracts* linear. *Calyx* smooth. *Fruit* silky upwards, with 4 yellow *spines*.

Valdivia.

6. A. CADILLA Hook. f.

Stem prostrate, branching, the branches ascending, and petioles villous with spreading hairs. *Leaves* membranaceous, silky; leaflets broad ovate-oblong, obtuse, incise-serrate. *Peduncle* scape-like, the head globose. *Calyx* densely setose-pilose, its lobes villous outside. *Stamens* 2, filaments and anthers small. *Fruit* obconical, ending in 4 long, divaricate, filiform *setæ*. *Style* short, slender, plumose.

Vernacular name, "cadilla."

S. Chili. Patagon. (?).

7. A. CÆSPITOSA Gill.

Silvery-silky. Leaflets 3–4-jugous, the upper entire, the lower bi-trifid, segments linear, entire, small. *Flowers* in 1–2 capitula. *Fruit* ovoid, smooth and armed with short *spines*.

(Chili); Chubut, in dry hills near Nafofo-cahuellu. "Densely or laxly cespitose. Seems not to differ from *A. pulvinata* O. Ktze." (Speg.)

8. ACÆNA CUNEATA Hook and Arn.

Silvery-silky. *Stem* short, decumbent. Leaflets 4–7 pairs, obliquely obovate-cuneate, apically incise-dentate. *Scape* strong, with a few large, remote flowers, or globose-spicate. *Calyx-lobes* silky outside. *Stamens* 2, with long filaments. *Stigma* depressed. *Fruits* obovate tetragonal, or broad and then 2-seeded; *armed* all round by glochidia.

Magellan; S. Patagon., by Rio Coy (J. B. Hatcher, Dec. 18, 1896). Cape Gregory.

9. A. EUPATORIA Cham. & Schl.

Stem erect, spreading, silky-villous. *Leaves* oblong, oblique at base, incised, serrate, silky beneath (resembling *Potentilla anserina*). *Flowers* 2-staminate, small, sparse and glomerate in an interrupted spike.

(S. Brazil); N. Patagon., in dry regions by Rio Negro.

10. A. FUEGIANA Phil.

Stem erect, 20 cm. high. *Leaves* coriaceous, crowded at its base, *Leaflets* 4–6 pairs, cuneate; the apex deeply 3–5-toothed. Lower flowers in axils of small leaves; the others in a dense, ovate head. *Fruits* pubescent, angled, with 4–5 *aculei* on each angle; these short, glochidiate.

S. Patagon., by Rio Chico; Fuegia.

11. A. INTEGERRIMA Gill.

All silky-woolly. *Leaflets* 4 pairs, ovate-oblong, entire, or apically 2–3-toothed. *Heads* globose, one or a second remote. *Fruit* oval, with projecting *ridges* having very short *glochidia*. *Near A. splendens.*

(Cordilleras of Chili); S. Patagon., by Rio Chico and Sta. Cruz.

12. A. KRAUSEI Phil.

Plant smooth or pubescent, glaucous-green; ascending. *Leaflets* 4–5 pairs, obovate, toothed; smooth except underneath along the nerves. *Sepals* pubescent. *Anthers* purple. *Fruit* obovoid-cuneiform, white-villous, with 4 unequal *spines.*

Valdivia.

13. Acæna lævigata Ait.

Smooth, decumbent. Ascending branches leafy. *Leaflets* opposite, oblong, obovate, obtuse, oblique at base, crenate-dentate above, coriaceous, smooth on upper surface, hairy underneath. *Scape* with cylindrical terminal *spike*, and others globular. *Calyx* glabrous. *Stamens* 2, filaments short, *anthers* rounded. *Stigma* short, fimbriate. *Fruit* glabrous, compressed, with 4 erect, unequal *spines*.

Patagon., N. and S.; Magellan, Fuegia to Hermite I.; Falklands.

14. A. lucida Vahl.

Loosely *pilose*. *Stem* long, decumbent, branching. *Leaflets* 8–9 pairs, 3–5-parted, villous beneath, the segments oblong to linear. Peduncles short, stout. *Spikes* ovate-oblong. Stamens usually 2. Fruit tetragonal with tubercles above on the angles, externally pilose.

Magellan, E. Fuegia (Ansorge, Dusén); Falklands, "on rocks near the sea."

15. A. macrostemon Hook. f.

Stem rather simple, 30 cm. high, leafy. *Leaflets* 5–7 pairs, silky, mostly sessile, decurrent, crenate-toothed. *Scape* long, sparingly pilose, having a large, globose head. *Calyx* pilose, its lobes oblong-obovate, silky. *Filaments* long, anthers large, oblong. *Style* long, plumose. *Fruit* having 2 *spines* twice as long as the others.

(Chili; Mendoza); S. Patagon. by Puerto Deseado.

16. A. magellanica Vahl.

Abortively *dœcious?* *Stem* short, branches ascending. *Leaves* subcoriaceous, silky beneath. *Leaflets* 3–7 pairs, broad-ovate-oblong, obtuse, upper ones decurrent, crenate-serrate or cleft. *Scape* naked or rarely 1-leaved, pubescent. *Heads* small, dilated after flowering. *Calyx* broad, pilose. Stamens 4, long; *anthers* large, didymous. *Style* long, broad, plumose. *Spines* long, unequal, glochidiate.

Heads never divided. The hairy peduncles and broad styles distinguish it from *A. adscendens*.

Magellan, Cape Gregory, etc. S. Patagon., on pampas near Rio Coy. (Hatcher, in fruit Dec. 17, 1896.)

17. ACÆNA MULTIFIDA Hook. f.

Sparsely villous. *Root* woody. *Stem* slender, ascending, simple or divided upwards. *Leaves* broad-linear on slender petioles; leaflets numerous, pinnatifid, or 3–5 partite, the segments linear, obtuse, margins revolute; glabrous above, silky underneath. *Peduncles* 20–40 cm. high, villous, sparsely leafy. Flowers crowded most of them, in a globose head. *Calyx* hirsute, its lobes fuscous-purple, silky outside. *Stamens* 2, short. Stigma depressed, fimbriate. *Fruit* tetragonal, smooth, with *glochidia* dilated at their base, on the upper part.

S. Patagon., in the Cordilleras (Hatcher); Magellan, Fuegia, passim. A steppe plant, affecting dry parts. "Stouter than *A. pinnatifida*, fruits twice as large, spines broad downwards." (Speg.)

18. A. MYRIOPHYLLA Lindl.

Erect, 15 cm. high, pubescent. *Leaflets* 7–9 pairs, linear, pinnatipartite; segments narrow, silky beneath. *Spikes* cylindrical, interrupted at the base. *Fruit* ovate, tomentose, with glochidiate *spines*.

(Chili; Argentina); N. Patagon. Common about the bizcacha (Viscacha) warrens." (J. Ball.)

19. A. NUDICAULIS Alboff.

Erect, rough, branching, from a large rhizome. *Underground branches* covered by old leaves. *Leaves* radical, ovate to oblong, short-petioled. *Leaflets* 9–11, obovate-cuneate, pectinate, apex emarginate. *Head* small, 1 cm. in diameter, globose, blackish. *Stamens* 4 (and 2 staminodes), short. *Fruit* with 4 or 2 short *spines*.

Fuegia, Ushuaia; cultivated.

20. A. OVALIFOLIA Ruiz. & Pav.

Stems creeping. *Leaflets* 4–5 pairs, oblong, subcuneate, villous underneath. *Spikes* globose. *Calyx* densely covered with long hairs. *Stamens* mostly 2. *Fruit* villous, with 2–3 (–4) *glochidia*.

(Peru); S. Patagon. (Hatcher); Magellan. Fuegia to Cape Horn.

21. A. PARVIFOLIA Phil.

Much branching, decumbent; branches 7 cm. long. *Leaves* subradical, small (8 mm. long) pilose; *leaflets* minute, 2-partite. *Peduncle* filiform,

short, with a terminal, globose *head* of about 12 flowers. *Calyx-segments* ovate, villous. *Fruits* unarmed.

E. Fuegia.

22. ACÆNA PHILIPPI Dusén. (*A. sericea* Phil. non Jacq.)

Cespitose, 24 cm. high. *Leaves* crowded, silky. *Leaflets* 5–7 pairs, ovate, deeply incised-serrate, larger towards apex of leaf. *Scapes* long, usually naked. Head globose. *Fruits* angular, slightly winged. *Glochidia* compressed.

E. Fuegia.

23. A. PINNATIFIDA Ruiz. & Pav. (Plate XIX.)

Erect, silky. *Leaflets* 3–5 pairs, deeply 3–5-parted, the segments linear. *Flowers* crowded in cylindrical *spikes*, the lower ones rather remote. *Stamens* 5–10. *Fruit* armed all around with *glochidia*.

(Chili); Magellan; S. Patagon., at head of Rio Sta. Cruz. (J. B. Hatcher. In fruit Feb. 9–25.) Golfo de San Jorge.

In some of the Hatcher specimens the leaflets are 8–9 pairs.

A. PINNATIFIDA GLABRATA Speg.

Upper surface of the *leaves* glabrous, obscurely fuscous-green, blackening when dry.

Patagon., by Rio Sta. Cruz.

24. A. PLATYACANTHA Speg.

Cespitose perennial. *Leaves* odd-pinnate, with 6–9 pairs of leaflets; the lower entire, the upper 1–2-partite, lanceolate, margin revolute, obtuse; silky-villous beneath, smooth above. *Scapes* subvillous, *capitate* with globose apex; also often with a few flowers or bracts lower down. *Fruit* tomentose, 2–4-angled, subulate, spinescent, the angles often with 2 superposed *spines;* armed in the sinuses with small *aculei*.

Patagon., by Magellan; R. Sta. Cruz, and Golfo de San Jorge.

A. PLATYACANTHA PARVIFOLIA Speg.

Leaves fasciculate at top, with a broad pericladium; *petiole* very short; *leaflets* 2–5 pairs, approximate, ovate, obtuse, mostly entire.

Patagon.; by Golfo de San Jorge.

25. ACÆNA PŒPPIGIANA Gay.

Villous, cespitose. *Stems* simple, strict. *Leaflets* 5–7 pairs, silky underneath, 5-partite, segments ovate-oblique. *Spike* interrupted, the lower flowers few, remote, the upper agglomerate. *Stamens* 2, short. *Stigmas* patelliform, fimbriate. *Fruits* very small, ovate-globose; *spines* pyramidal, unequal, sparingly glochidiate.

(Chili); by Hatcher in S. Patagon., on pampas near Coy Inlet. The leaves are crowded at the base, having many obscure lobes. The flowers are in a terminal, and 2–3 smaller subterminal spikes.

26. A. PULVINATA O. Ktze.

Stems many, short, densely pulvinate, 5–10 cm. high, at base covered by old sheaths, upwards having 2–3 white, silky *leaves*, each having 3–5 *leaflets;* these are trisect with subulate segments. *Petiole* 1 cm., with a basal sheath. *Scape* 3 cm., leafless, or 1-leaved, with 1 subulate bract. *Head* globose, 10-flowered. *Calyx-segments* white-silky, with long hairs. *Fruit* triquetrous-obovate, glabrous, with very short *glochidia* on all sides.

(Argentina); Patagon. (See *A. cæspitosa* Gill.)

27. A. PUMILA Vahl.

Glabrous. *Root* descending. *Stem* short, 3 cm., simple. *Leaflets* 10–12 pairs, small, obliquely ovate, obtuse, crenate-serrate, coriaceous, margins recurving. *Scape* with a slender spike. *Calyx-lobes* oblong-obtuse, pilose above. *Stamens* 4, short. *Fruit* with short *glochidia* all round. *Stigma* depressed, fimbriate.

"A pretty little species; with spike elongated."

Magellan, Desolation I., Fuegia to Hermite I.

28. A. SERICEA DC.

Leaflets obovate, incise-toothed, pubescent, silky underneath. Flowers in a crowded, cylindrical *spike*, on a decumbent stem. *Corolla* sympetalous, rotate. *Calyx* glochidiate all round. "*Fruit* elliptical, 6 by 3 mm., obscurely 3–4-gonal, *angles* minutely 1–4-spinuligerous, *faces* tomentosulous with sparing, minute aculei." (Speg.)

S. Patagon., at Puerto Deseado; by Rio de Sta. Cruz.

29. Acæna splendens Hook. & Arn.

Woolly-silky perennial. Root simple. *Stem* short, stout, covered by imbricating stipules. *Leaves* obovate; *leaflets* 7–9, obovate, 1–2 cm. long, sessile, apically many-toothed; *hairs* bronze-colored. *Scape* with apiculate, interrupted spike. *Fruit* oblong, with many spreading, long *spines* (glochidia).

(Chili); N. Patagon., by the Upper Limay, "apparently brought down by streams from the Andes." (J. Ball.) S. Patagon., by Rio Sta. Cruz; Magellan; at Punta Anegada. E. Fuegia. (Dusén.)

30. A. tehuelcha Speg.

Small, cespitose, *silky*. *Leaves* oblong, spatulate, pinnatipartite; the parts 2–5-cleft, and subdivisions oblanceolate. *Flowers* dimorphous, females concealed in axils of leaves; hermaphrodites seated on scapes. *Fruit* winged, with *spines* on margins, *glochidiate* on the angles, small on the faces.

S. Patagon., by Rio Chico and Lago Argentino. "Bark woody, densely coated with blackish scales (remains of old leaves)."

31. A. tenera Alboff.

Low, corticated, with clear, green *leaves*. *Rhizome* long, rough, branching, stoloniferous. *Leaves* radical, long-petioled, narrow-oblong. *Leaflets* 9–13, ovate-orbicular, membranous, pectinate-emarginate. *Scape* with small, globose *head* (7–5 mm. diam.) *Calyx* glandular. *Spines* 5.

Fuegia.

32. A. trifida Ruiz. & Pav.

Silky-villous. *Caudex* woody; stem erect, 1 meter high. *Leaves* mostly crowded at base. *Leaflets* about 6 pairs, oblong-ovate, 4–8 mm. long, pinnatifid into 3 or more segments. *Flowers* greenish, in a cylindrical spike, some remote. *Calyx-lobes* exceeding the tube. *Anthers* dark-purple. *Fruit* 3–4-angled, angles armed with 2–4 stout *spines*, and smaller spines between.

(Calif. to Chili); by Hatcher on pampas near Coy Inlet, S. Patagon.

Torrey & Gray referred the Californian plant to *A. pinnatifida;* but see *Botany of Calif.*, by Brewer & Watson, i, p. 186.

33. ACÆNA VENULOSA Griseb. (= *A. lævigata* Ait.?)

Branches ascending, leafy below, rather glabrous, *1-headed*. *Leaflets* 4–6 pairs, cuneate or subrotundate, obovate, pinnatifid-crenate upwards, coriaceous, veiny. *Calyx* glabrous, its segments and the bracts hairy. *Stamens* 2, short, anthers round. *Stigma* short, dilated, fimbriate. *Spines* 4, spreading, twice as long as the calyx.

Magellan. "I cannot find any difference between *A. lævigata* Ait. and *A. venulosa*. In both the spines are alike elongated, and the divisions of the calyx are ciliate." (A. Franchet.)

11. PRUNUS Linn. (including *Cerasus*). Plum, Cherry.

Trees or shrubs, mostly with edible *drupes*, and simple, serrate, petiolate *leaves*, which are conduplicate or convolute in the bud. *Stipules* small, fugacious. *Flowers* perigynous, carpel usually 1. *Seed* 1, suspended.

Species 90, natives of N. Temp. Amer. and Asia; now cultivated in all temperate regions.

1. P. CAPRONIANA (DC. sub *Cerasus*).

A small tree, with spreading branches, flowers subcoëtaneous with the leaves. *Calyx* broad-campanulate; the peduncle thickish, not long. *Fruit* globose-depressed; the suture scarcely depressed. *Epicarp* not adhering to the mesocarp, which is mostly acid, and styptic.

P. CAPRONIANA GRIOTTA.

Fruits globose-depressed, black-purplish, the *flesh* red.

N. Patagon., along Rio Negro (introduced).

2. P. CERASUS L. Cherry.

Tree, with nearly sessile *umbels*, the calyx-tube turbinate, the segments crenate-serrate, obtuse. *Leaves* not drooping, oblong-obovate to ovate-lanceolate.

(Cultivated in temperate climates); Patagon., (escaped).

Family 52. LEGUMINOSÆ. Pea Family.

Plants of various habits, with usually *alternate*, *stipulate*, mostly compound *leaves;* irregular (papilionaceous) or regular, inferior or sub-

perigynous, *flowers*, with the *odd sepal* anterior; and monocarpellary *ovary*, becoming a *legume*. *Endosperm* usually none; *cotyledons* large, fleshy.

Species exceeding 7,000, many cosmopolitan. Some species are characteristic of particular regions; especially of Australia, which is headquarters of the family.

The following *subfamilies* are sometimes regarded as distinct families.

I. MIMOSEÆ: p. 488.

Leaves bi-tri-pinnate or reduced to phyllodes. *Flowers* regular; the *calyx-lobes* and *petals* valvate. *Stamens* isomerous with the perianth-divisions, or commonly numerous.

II. CÆSALPINIEÆ: p. 491.

Leaves simple, or simply- or bi-pinnate. *Flowers* more or less irregular; the *posterior petal* enclosed by the lateral petals. *Stamens* 10, or fewer, distinct or united.

III. PAPILIONACEÆ: p. 495.

Leaves simply compound, rarely simple. *Flowers* papilionaceous; the *posterior petal* enclosing the lateral petals. *Stamens* 10, mon- or diadelphous or distinct; rarely 9 or 5.

KEY TO THE GENERA.

A. Flowers regular. Petals and sepals valvate. Stamens as many, or twice as many as the petals. Trees or shrubs with bipinnate leaves, sometimes reduced. (MIMOSEÆ.)

b. Anthers glandless. Pod flat, its valves at length separating from the persisting sutures. 1. *Mimosa*, p. 488.

*b*2. Anthers with a deciduous gland. Pod convex, straight or twisted. Seeds with endosperm. Petals united. 2. *Prosopis*, p. 489.

AA. Flowers zygomorphic; the petals imbricate.

B. Flowers not papilionaceous; posterior petal internal. Calyx-segments almost or quite separate. (CÆSALPINEÆ.)

c. Leaves even-pinnate. Stamens 10 or 5. Anthers basifixed, opening terminally. 3. *Cassia*, p. 491.

*c*2. Leaves bipinnate. Stamens 10, subequal. Anthers opening laterally. Ovary free. Flowers racemose or panicled.

d. Calyx-lobes valvate in the bud. Pod sessile, many-seeded. Leaflets in many pairs. Unarmed trees with handsome flowers. 4. *Poinciana*, p. 492.

*d*2. Calyx-lobes long and subequal, nearly valvate. Pod sessile, flat, 2–many-seeded. Low, gland-punctate herbs or undershrubs. 5. *Hoffmanseggia*, p. 493.

*d*3. Calyx-lobes imbricate in the bud.

e. Pod 1-seeded, with long bristles, slightly stalked. Viscous shrub. 6. *Zuccagnia*, p. 494.

e2. Pod 2–many-seeded, sessile. Stigma capitate or concave. Trees or climbing, often thorny shrubs. 7. *Cæsalpinia*, p. 494.

BB. Flowers papilionaceous; posterior petal external (called the *vexillum*, the lateral petals are the *alæ*, and the anterior pair form the *carina*). (PAPILIONACEÆ.)

c. Filaments free. Leaves odd-pinnate (rarely reduced to spines). Flowers racemose. Pod 3–many-seeded. Mostly shrubs.

d. Pod sessile or nearly so, indehiscent, drupe-like. Petals long-clawed, golden. Thorny shrubs. 8. *Gourliæa*, p. 495.

d2. Pod short-stiped, constricted between the seeds, indehiscent or dehiscing late. Petals subsessile, white or yellowish. Leaflets sometimes stipellate. 9. *Sophora*, p. 495.

c2. Filaments united, monadelphous or diadelphous. Pod 2-valved or indehiscent. Leaflets without stipels.

d. Leaves simple or digitately 3–5 foliolate, or reduced. Mostly shrubs.

e. Stamens monadelphous, staminal tube open dorsally. Stigma incurved, smooth inwards. Pod with convex valves, few-seeded. Leaves entire or 3-cleft often spinescent, with connate, ochreate stipules. 10. *Anarthrophyllum*, p. 496.

e2. Stamens monadelphous, staminal tube closed.

f. Seeds non-strophiolate. Calyx-lobes, 2–3, much exceeding the calyx-tube. Alæ dorsally coalescing at apex. Leaves simple or digitately 5–∞-foliolate, with adnate stipules. 11. *Lupinus*, p. 498.

f2. Seeds strophiolate. Calyx deeply 2-cleft, coriaceous, colored. Leaves reduced to spines or scales. 12. *Ulex*, p. 499.

d2. Leaves 3-foliolate, the leaflets denticulate. Stamens diadelphous, the vexillary being free entirely or half-way. Anthers all similar. Carina obtuse. Herbs. (TRIFOLIEÆ.)

e. Corolla deciduous after anthesis. Claws of petals free. Pod indehiscent or follicular. Leaves pinnately trifoliolate.

f. Flowers in heads or short racemes. Pod spirally coiled, or reniform, or broad-oval and curved. 13. *Medicago*, p. 500.

f2. Flowers in long, spike-like racemes. Pod thick, almost globular or ovoid, 14. *Melilotus*, p. 501.

e2. Corolla usually drying and persisting after flowering. Flowers in heads or umbels. Pod straight, rather short. Claws of all, or of the paired petals, adnate to the staminal tube. 15. *Trifolium*, p. 501.

d3. Leaves pinnate.

e. Rachis of leaves without a terminal bristle or tendril. Pod dehiscent, with no hypogynous disk. Filaments filiform. Seeds non-strophiolate. Mostly herbs or undershrubs.

f. Seeds numerous. (GALEGEÆ.)

g. Stamens monadelphous, with the staminal tube closed. Racemes rarely in the axils. Fruit stiped, with a cup-like disk inside the staminal tube. Carina not spiral. Style smooth. Glabrous herbs. 16. *Galega*, p. 502.

g2. Vexillary stamen free or partly united. Inflorescence axillary. Pod more or less inflated, usually 2-celled lengthwise, or nearly so.

Style smooth, rarely pencilled around the stigma (*Astragalinæ.*) Anther-cells distinct. Pod (not prickly, often stiped) 2-celled, or if 1-celled, then globular or ovoid, rarely flat. Carina obtuse. (Flowers rarely yellow, often violet to pink.) Leaves mostly odd-pinnate. 17. *Astragalus*, p. 502.

*f*2. Seeds few; pod short. Diadelphous, vexillary stamen free.

g. (Section of *Astragalus?*) Calyx turbinate, sessile. Leaves even pinnate, ending in a spine; stipules adnate. Pod 1-celled, usually 1-seeded. White-haired, thorny shrub. 18. *Tragacantha*, p. 508.

*g*2. Anther-cells fusing towards their apex. Pod rather thick, prickly. Leaves odd-pinnate, glandular hairy. 19. *Glycyrrhiza*, p. 509.

*g*3. (*Phaseoleæ.*) Leaves pinnately 3-foliolate, without stipels or tendrils. Carina apically incurved, falcate. Pod 2-seeded, flat, curved. Style not bearded; calyx not enlarging in the fruit. Yellowish flowers mostly in axillary racemes. Leaves resinous-dotted underneath. 23. *Rhynchosia*, p. 531.

*e*2. Rachis of leaves with a terminal bristle or a tendril. Vexillary stamen free or partly united in a staminal tube. Pod more or less compressed. Herbs with axillary flowers or racemes. (VICIEÆ.)

f. Staminal tube obliquely truncate. Style slender, apically tufted. Pod with several, or only 2 seeds. 21. *Vicia*, p. 521.

*f*2. Staminal tube evenly truncate. Style broadening upwards, bearded along the inner side. Seeds several. 22. *Lathyrus*, p. 526.

*e*3. Filaments free, the uppermost pair basally broad, and often adnate to the carina. Pod mostly with a straight upper and incurved lower suture, indehiscent, or dehiscing by the upper suture. Herbs or undershrubs, often armed terminally. Leaves pinnate, leaflets mostly numerous rarely only 3; no stipels. Racemes or panicles terminal. 20. *Patagonium* (*Adesmia*), p. 509.

Subfamily *I. MIMOSEÆ.*

1. MIMOSA Linn.

Leaves bipinnate, often sensitive, sometimes reduced to phyllodes. Flowers small, sessile, regular, in heads or spikes; stamens usually numerous. Calyx small, or pappus-like. Legume with its 2 valves separating from a persisting septum.

Species 300, most in tropical and subtropical America. A few in S. Asia and Africa. Not in Australia, except *M. pudica* L.

M. ROCÆ Ltz. & Nied.

A woody, decumbent shrub, unarmed, but tomentose, with stellate wool. Leaves with 2 pairs of pinnæ, the common petiole ending in a stipuliform

blade. Pinnæ with 8–11 pairs of leaflets, and the rachis prolonged. Leaflets broad-elliptical, or elliptic-lanceolate. Flower-heads axillary, peduncled, globose, 15–17-flowered; one head on the peduncle. Flowers 4-merous, 4 mm. long. Legume 1–4-seeded, in joints.

(Sierra de la Ventana, near Bahia Blanca); N. Patagon.

2. PROSOPIS Linn. Algaroba.

Trees or shrubs, with bipinnate *leaves*, spinose or unarmed; and small, regular, 5-merous flowers in *heads* or *spikes*. *Petals* united halfway. *Anthers* mostly with a deciduous gland. *Legume* straight or twisted, with internal cross-septa.

Species 30, curious both in structure and distribution. Most of the species are in S. Amer., 10 of these in Argentina, and several in Patagonia; also 4 species in Mexico, Texas and Calif., 1 in trop. Africa; 1 in the Caucasian and Himalayan regions.

Some species, as *P. dulcis* and *P. horrida* of Peru, have pods with sweet mucilage, and form "pastures" which serve as food for cattle. The Mesquit-tree of Texas, *P. juliflora* DC., yields gum, and is valuable for its hard wood.

Key to the Species.

a. Legume straight or falcate.	
b. Leaves abortive or rudimentary. Spines axillary.	*humilis*.
*b*2. Leaf-pinnules 1 pair. Extra-axillary spines.	*patagonica*.
*b*3. Pinnules 2–3 pairs. Apically spinescent.	*striata*.
*b*4. Pinnules 2–3 pairs. Branches flexuose.	*denudans*.
*b*5. Pinnules 6–12 pairs. Stipular spines.	*campestris*.
*b*6. Pinnules 13–20 pairs. Stipular spines.	*siliquastrum*.
*a*2. Legume contorted.	*strombulifera*.

1. P. CAMPESTRIS Griseb. Algaroba.

Shrub, tortuosely intertwined, hirtellous. *Stipular* spines strong, at length exceeding the fasciculate leaves. *Pinnæ* 1, rarely 2 pairs, with minute glands between, opposite the dorsal stipel. *Leaflets* 6–12 pairs, approximate, minute, oblong-linear, obtuse, pilose-margined. *Spikes* lateral, briefly oblong-cylindric. Pale yellow *corolla*, puberulous at base. *Pod* long, 7–11-seeded.

(Argentina); Patagon.

2. PROSOPIS DENUDANS Benth.

Branches short, flexuose, they and the *leaves* puberulous. Leaves fasciculate, with glabrous petioles. *Leaflets* 2–3 pairs, small, oblong-linear. *Spikes* peduncled, oblong. *Petals* woolly inside. *Anthers* ovate. *Legumes* villous, long-falcate.

Patagon., by Rio Chubut.

3. P. GILLESII (sub. *Poinciana*).

4. P. HUMILIS Gill.

Undershrubs, with angulate, sulcate branches, and striate, glabrous branchlets. *Spines* (abortive branchlets) axillary, solitary or paired, soft, long, striate. Stipules minute, subulate. *Leaves* abortive, or reduced to a glanduliferous, 1–2-foliolate, small petiole, ending in a bristle. *Leaflets* small, lanceolate, acute. *Spikes* solitary on the peduncle, cylindraceous, glabrous, branching towards the middle. *Anthers* glanduliferous or naked. *Legume* compressed, falcate. *Flowers* and pods scarlet to purplish.

(Chili); N. Patagon, near head of Rio Negro.

5. P. PATAGONICA Speg.

Fruticose, with spiniform, extra-axillary, stout, solitary branches. *Leaves* fasciculate at the nodes, twice-dichotomous. Leaflets 1 pair, spatulate, thickish. *Spikes* cylindric, the peduncle exceeding the leaves. *Flowers* green; calyx glabrous, short, scarcely toothed. *Corolla* glabrous outside, villous within.

Patagon., by Golfo de San Jorge.

6. P. SILIQUASTRUM DC.

Fruticose, subglabrous. Branches long, subflexuose. *Stipular spines* solitary or paired, strong. *Fascicles* of spikes and leaves proceeding from the same tubercles. *Pinnæ* 1 pair, often with an odd one; *leaflets* 13–20-pairs, narrowly linear-obtuse.

S. Patagon.; N. Patagon., near Rawson.

7. P. STRIATA Benth. (*Mimosa striata* Speg.)

Glabrous. Branches thick, with yellow ribs, apically spinescent. *Leaves* few; *stipules* spinescent, recurved. *Pinnæ* 1 pair; pinnules 2–3

pairs, oblong. *Peduncles* exceeding the leaves. *Heads* globose. *Flowers* greenish. *Calyx* minutely 4-toothed. *Petals* long, glabrous. Stamens 10. *Ovary* villous. *Pod* lomentaceous, at length articulately deciduous.

N. Patagon., by Rio Negro.

8. Prosopis strombulifera Benth.

Glabrous. With *stipular* spines, or unarmed. *Leaflets* of pinnæ 4–6 pairs, alternate or opposite, linear, obtuse; a gland between some of the pinnæ. *Legume* terete, spirally contorted. (Fig. 59, A, B, in Eng. & Prantl, iii, 3, p. 104.)

(Peru; Chili. Cultivated in gardens as medicine for tooth-ache. "Retorturio.") N. Patagon., by Rio Negro.

Subfamily *II. CÆSALPINEÆ.*

3. CASSIA Linn.

Leaves equally pinnate. *Calyx-tube* very short, its lobes subequal, imbricate. *Corolla* nearly regular, mostly yellow. *Stamens* 10 or 5, unequal; anthers opening by pores. *Seeds* numerous.

Species 275, mostly in warm and temperate regions.

Key to the Species.

a. Leafless.	*aphylla.*
a2. Leaflets 3–6 pairs; and	
b. Oval, acute.	*glauca.*
b2. Broad-ovate, retuse.	*lorentzii.*
b3. Cuneate-obovate, retuse.	*arnottiana.*

1. C. aphylla Cav.

Fruticose, branches dichotomous, terete, glabrous, leafless, nearly a meter high. Branches rather thick, greenish-yellow. *Flowers* in terminal *racemes*, alternately paired, on separate pedicels. *Calyx-leaves* ovate, 3 outer pilose. *Corolla* saffron, twice as long as the calyx; *petals* ovate. *Pod* flat, linear, 10 cm. long, 3 mm. broad. *Seeds* numerous, on capillary funicles.

(Argentina); Patagon., shrubberies, "an important occupant of the fields of Patagonia, as well as on the mountains."

CASSIA APHYLLA DIVARICATA.

N. Patagon., by Rio Negro.

2. C. ARNOTTIANA Gill. & Hook.

Fruticose, small, glabrous, naked below. *Leaflets* 4–5 pairs, thickish, glaucous, cuneate-obovate, retuse; a subulate gland between the lowest pair. *Raceme* twice as long as the leaves, 2–3-flowered. *Legume* oblong, coriaceous, thick, compressed. Sutures tumid.

(Chili); N. Patagon., by Lago Nahuel-huapi.

3. C. GLAUCA Lam.

Shrub, about 1.5 meters high. *Leaflets* 4–6-pairs, oval, acutish, glaucous, an oblong, sessile gland between the 3 lowest pairs. *Stipules* linear, subulate, spreading. Legumes linear, straight, mucronate.

(East Indies); Patagonia (?).

4. C. LORENTZII Nied.

Shrub 30–100 cm. high, erect, glabrous, naked below, scarred, branches and branchlets reticulate, green when young, becoming olive. *Leaflets* 3–5 pairs, opposite, thickish, broad-ovate, retuse, or with nerve produced; entire, subsessile, green; a subulate gland between the lowest pair. *Stipules* lanceolate, acutish. *Racemes* twice as long as the leaf, 2–5-flowered. *Legume* sessile, oblong, coriaceous, thick, compressed, with tumid sutures 60 mm. long, gray-fuscous. *Seeds* numerous, mostly horizontal, suborbicular, compressed, with prominent brown hilum.

N. Patagon., by Rio Negro.

4. POINCIANA Linn.

Trees, having bipinnate *leaves*, with many small leaflets and terminal racemes of orange or red flowers. *Calyx-tube* short or obsolete, segments valvate, subequal. *Petals* orbicular, subequal, or the posterior differing. *Stamens* 10, free, hairy at base, inflexed above. *Ovary* sessile, many-ovulate; the *stigma* truncate, ciliolate. *Legume* elongate, internally constricted between the seeds. *Seeds* transverse, oblong, having endosperm; radicle exserted.

POINCIANA GILLESII Hook. (Wall, sub *Cæsalpinia.*)

Shrub, more than 1 meter high, *unarmed*, with numerous small, oblong leaflets. *Petals* glandular, toothed-ciliate at their apex. *Legume* cimeter-form, glandular, 1-celled, dry. *Flowers* sulphur-colored, with a sickly odor (supposed to injure the eyes).

(Chili: Uruguay); N. Patagon., by Rio Negro; also cultivated.

5. HOFFMANSEGGIA Cav.

Herbs or low shrubs, with glandular-punctate, bipinnate *leaves* and *racemes* of yellow, nearly regular flowers. *Calyx-segments* 5, subequal. *Petals* 5, imbricated. *Stamens* 10, anthers opening by slits. *Pod* flat. *Seeds* numerous.

Species 20, chiefly in S. Amer., and northwards to California and Mexico; 1 in tropical Africa.

1. H. FALCARIA Gay.

Herb, not black-pitted, but with stalked glands. *Stipules* ovate. *Pinnæ* 7–11. *Pinnules* 12–21, oblong. Racemes few-flowered. *Legume* linear-oblong, curved or nearly straight, 8–12-seeded.

(By Andes to N. Amer.); N. Patagon., high plains along Rio Negro.

2. H. PATAGONICA Speg.

Low, subglabrous. Radical and cauline *leaves* similar; pinnæ 3–4 pairs and terminal; on long petiole. *Leaflets* 4–5 pairs, minute, ovate. *Scape* glabrous, sparsely racemose. *Flowers* mid-size. *Calyx* purple. *Corolla* yellow. Legume glabrous.

N. Patagon., high plane near Trelew.

3. H. TRIFOLIATA Cav.

Nearly stemless. *Pinnæ* 3; *leaflets* ovate, tomentose. *Legumes* erect, villous (glabrous here, Speg.).

Patagon., passim.

H. TRIFOLIATA PENTAPHYLLA Speg.

Leaflets 5, some 3. *Stipules* ovate, acutish; they and the *leaflets* elliptic-subovate, nervulose.

N. Patagon., at confluence of Limay and Neuquen.

6. ZUCCAGNIA Cav.

Glutinous shrubs, with even-pinnate *leaves*, and small, caducous *stipules*. *Leaflets* small, coriaceous. Terminal *racemes* of yellow flowers, having very short *calyx-tube*, and subequal segments; *stamens* 10, free, bent down, filaments hairy at base. *Ovary* short-stalked, 1-seeded. *Legume* short, flat; the *seed* pendent.

Only species:

Z. PUNCTATA Cav.

Leaflets 7–8 pairs, alternate, elliptic, glutinous, punctate.

Shrub over 1 meter high, with tortuose branches.

(Mountains of Chili); N. Patagon.

7. CÆSALPINIA Linn.

Trees or climbing shrubs, sometimes spinescent, with bipinnate *leaves* and racemose, yellow or red *flowers*. *Calyx-tube* short, its lowest segment often large. *Stamens* 10, declined, anthers all similar, dehiscing by slits. *Legume* short, compressed, coriaceous, 2-valved, or thick and indehiscent, often septate. Seeds few.

Species 40, in warm parts of both hemisperes.

1. C. GLAUCA (Ort. sub *Larrea*) O. Ktze. (*Hoffmanseggia* DC.)

Root creeping, here and there tuberous. *Stem* decumbent, scarcely suffruticose. *Leaflets* 3–6 pairs and terminal, ovate-oblong, glaucous. *Pods* falciform.

(Boliv.; Argent.); Patagon.

C. GLAUCA ANDINA Phil.

Depauperate, nearly stemless.

(Bolivia); Patagon.

C. GLAUCA PAUCIGLANDULOSA O. Ktze.

Glands sparse, or none, or confined to the inflorescence.

Patagon.

2. C. PRÆCOX Ruiz. & Pav.

Tree. Petioles of the even-bipinnate *leaves*, ending in a spine. *Pinnæ* 3 pairs, each having 5–7 pairs of small, emarginate leaflets. *Stipular* spines strong, conical. *Legumes* straight.

(Chili); N. Patagon. by Rio Negro.

Subfamily *III. PAPILIONACEÆ.*

8. GOURLIÆA Gill.

Shrub, with spinescent branches, odd-pinnate *leaves* with many small *leaflets*, and short, racemes of small, golden flowers, crowded at the nodes. *Calyx* with its two upper lobes truncate, subconnate. *Petals* long-clawed; the standard broad orbicular; the keel shorter than the wings, obtuse. *Stamens* free or united at the base. *Ovules* numerous; but *legume* short, subdrupaceous, with only 1 or 2 seeds.

Only species:

G. DECORTICANS Hook. & Arn.

Nearly 2 meters high; bearing edible *drupes* which form the chief food of the Indians of the Grand Chaco. "Chanar."

(Fig. G in Eng. & Prantl, iii, 3, p. 196.) (Argentina); N. Patagon. by the Rio Negro and Limay.

9. SOPHORA Linn.

Mostly shrubby, with unequally pinnate *leaves*, having many small, or few large, *leaflets*, often with *stipels;* and white to yellow or bluish-violet *flowers* in panicled *racemes*. *Bracts* small or none. *Calyx-teeth* short. *Standard* broad, rounded, mostly shorter than the rather straight keel. *Wings* long, oblique. *Stamens* free or rarely united at base. *Legume* shortly stiped. *Style* bent, with small, terminal stigma. *Fruit* terete or slightly compressed, contracted between the numerous seeds, indehiscent or at length dehiscing. *Seeds* ovoid to globular.

Species 25, most in warm climates.

Section *Edwardsia* has legume 4-winged, with eight species (E. Indies, N. Zeal.; Hawaii and Andina).

S. TETRAPTERA J. Mill. (*Edwardsia macnabiana* Graham.)
(*E. grandiflora* Salisb.)

A *tree* of variable habit. Branches of the young slender and flexuose, of the old straight, with fulvous, silky hair. *Leaves* exstipulate, 13–15 cm. long, the petioles slender, stout and silky or rusty; *leaflets* 6–40 pairs, varying from broad-obcordate to linear-oblong, retuse or 2-lobed; in the young smaller, broader, glabrous. *Flowers* 25–50 mm. long, yellow, on

axillary, 4–8-flowered racemes. *Calyx* silky, gibbous, its mouth oblique. *Standard* short, obtuse, scarcely reflected. *Legume* 3–12 cm. long, its joints oblong, 4-angled and 4-winged. *Seeds* oblong, pale yellowish brown; cotyledons very consolidated.

A large and a small variety in New Zealand, abundant; the small form is also common in Juan Fernandez and S. Chili.

10. ANARTHROPHYLLUM Benth.

Branching, somewhat silky, rigid shrubs. *Leaves* small, entire or 3-cleft, mostly spinescent, united below with the stipules into a ring. *Flowers* solitary at the ends of the branches, reddish-yellow. *Calyx* tubular, its 2 upper lobes free; its 3 lower lobes united into a lip. *Wings* oblong. *Keel* obtuse, once plaited on each side. *Stamens* all connate in a sheath, open above; anthers alternately long-basifixed, and short-versatile. *Ovary* subsessile, ovules few. *Style* incurved, glabrous, with capitate stigma. *Legume* obliquely ovate-cuspidate, or narrow, compressed.

Species 8, extra-tropical S. Amer.

Key to the Species.

The species with petiolate, silky, trisect leaves, having spinose, subulate, segments are chiefly as by O. Kuntze:

a. Petals pilose externally, exceeding the calyx.
- *b*. Leaf-segments, 5–10 mm. long.
  - *c*. Calyx, lower lip tridentate. — *bergii* Hier.
  - *c*2. Calyx, lower lip trisect. — *rigidum* Hier.
- *b*2. Leaf-segments 10–20 mm. long.
  - *c*. Calyx, lower lip tridentate. Petals subequal, erect. (*Genista elegans.*) — *elegans* Ph.
  - *c*2. Calyx, lower lip trisect, with subulate segments.
    - *d*. Petals orange, unequal, wings and keel straight, about twice as long as the vexillum. — *morenonis* O. Ktze.
    - *d*2. Petals yellow, subequal, keel deflex. — *toninii* O. Ktze.
- *b*3. Leaves and stipules ovate, mucronate, spinulose, silky. Flowers yellow. — *subandinum* Speg.

*a*2. Petals glabrous externally, scarcely exceeding the calyx. — *beaufilsii* O. Ktze.

*a*3. Standard broad, only half as long as the wings. — *desideratum.*

The genus is divisible into two subgenera: (1) *Amerophyllum*, with entire leaves; (2) *Trimerophyllum,* with trifid or tripartite leaves.

1. ANARTHROPHYLLUM BEAUFILSII O. Ktze.

Petals glabrous externally, scarcely exceeding the calyx-lobes. *Calyx* tomentose; its lower lip produced, 3-toothed. Wings and keel produced, twice as long as the standard.

Patagon., by Sta. Cruz.

2. A. DESIDERATUM Benth. (DC. sub *Genista.*)

Trimerophyllum. Branches *unarmed*, terete. *Leaflets* 3, linear-subulate, apically pungent, appressed-pubescent, silky. *Flowers* pediceled. *Standard* broad, only half as long as the wings. *Legumes* pubescent.

Varies in size of leaf-segments, degree of silkiness, etc., and may reach nearly 3 meters high. "Not sufficiently known," O. Ktze. (= *A. bergii* Hier.?)

S. Patagon., Puerto Deseado. By Hatcher at Rio Sta. Cruz. Fuegia. Flowering Nov. 21; by Rio Chubut and Rio Gallegos.

Under *A. desideratum*, Speg. gives 3 forms.

(1) *bergi* or *typica;* lobes of leaves 5–10 mm. long; lower lip of calyx, briefly 3-toothed.

(2) *merenonis*, lobes of leaves 10–20 mm., lip of calyx 3-cleft to the middle.

(3) *mustersi* Speg., lobes of leaves 15–35 mm., lip of calyx 3-partite to the base.

3. A. ELEGANS Benth. (Gill. sub *Genista.*)

Trimerophyllum. Leaves 3-partite, their segments elongate-subulate, canaliculate, acute, pungent, spinescent, appressed-silky. *Stipules* as long, lanceolate, united at base. *Corolla* twice as long as the calyx. *Legumes* linear-lanceolate, silky, 5–6-seeded, the valves at length spirally twisted and glabrous. Beautiful scarlet, paler *in sicco.*

N. Patagon. S. Patagon., by J. B. Hatcher, in dense tufts, 2–3 feet in diameter; (by Barnum Brown, Nov. 10, 1899).

4. A. MORENONIS O. Ktze.

Petals orange, unequal. Standard only half as long as the other petals.

Patagon. (M. & T.)

5. A. RIGIDUM (Gill.) Hieron.

Trimerophyllum. *Leaves* and buds bitter, pale green. *Leaf-segments* long cuspidate-mucronate. *Flowers* orange, on a small, silky-canescent

pedicel, sessile in 2's or 3's. Lower *calyx-segment* longer, 3-toothed. *Standard* greatly exceeding the wings, dorsally hoary.

N. and S. Patagon.

6. ANARTHROPHYLLUM SUBANDINUM Speg.

Amerophyllum. Low, perennial, densely fastigiate, branching, silky-silvery. *Leaves* not divided, rigid, crowded. *Stipules* ovate to ovate-lanceolate, equalling the scarcely narrower limb, and like it mucronate-spinulose. *Flowers* acrogenous, solitary; *calyx* hoary-silvery, trifid, the lower lip 3-toothed, as long as the concolorous pedicel. *Corolla* twice as long, yellow, the standard equalling the wings and keel. *Legume* sub-linear-lanceolate, appressed, silvery-silky, its valves after dehiscence spirally twisted.

Chubut, in dry hills near Nafofo-cahuellu.

A. SUBANDINUM NAHUELHUAPIENSIS Speg.

Stouter than the species, 40–70 cm. high, branches long, slender. *Leaves* on ends of branches relaxed, and *flowers* solitary in their axils.

Patagon., in rocky hills by Rio Collon-curá.

7. A. TONINII O. Ktze. (*A. rigidum toninii* Speg.)

Petals yellow, subequal, pilose; keel deflexed, mostly taller than the type (1–150 cm.), *leaf-segments* longer than in *A. rigidum*, but not separable.

Patagonia, near Trelew and near Lago Nahuel-huapi.

11. LUPINUS Linn. Lupine.

Herbs, with digitate *leaves*, stipules adnate to the petioles, and with terminal *racemes* or spikes of showy flowers. *Calyx* deeply 2-lipped. Sides of *standard* reflexed. *Keel* falcate, pointed. *Stamens* 10, monadelphous; anthers alternately longer and shorter. *Pod* flat, often narrowed between the seeds.

Species 100, in temperate and warm regions.

1. L. BRACTEOLARIS Desrouss.

Annual, with ovate-lanceolate *stipules*, and obovate-oblong *leaflets*, villous on both sides. *Flowers* alternate, pediceled, bracteolate. Upper calyx-lip bipartite; lower 3-cleft.

(Montevideo.)

LUPINUS BRACTEOLARIS DEPAUPERATUS O. Ktze.

Nearly stemless, scarcely 8 cm. high.

Patagon.

2. L. CRUCKSHANKSII Hook. (?).

Glabrous. *Stem* erect, fistulous or flattened. *Leaves* subremote, with 6–8-leaflets; these narrowly obovate-oblong, or elliptical, or subcuneate, apically obtuse, basally acute. *Racemes* terminal, lax, few-flowered. *Flowers* alternate or subverticillate, large (bluish when dry). *Legume* oblong, or obovate-oblong, shortly pilose, 3–4-seeded. *Seeds* white, shining.

(Chili); Magellan. "The Magellan forms have long leaves with 8–12 leaflets, which are oblanceolate, 70 by 18 mm.; racemes dense, 40 cm. long." (Speg.)

3. L. MICROCARPUS Sims.

Erect annual with verticillate *flowers*, having sides of the *vexillum reflexed; ovules* 2, with broad cotyledons. Villous, with long hairs. *Stipules* long-setaceous; *leaves* mostly approximate on long petioles; *leaflets* about 9, obtuse or emarginate, or sometimes acutish, smooth on upper surface. *Pedicels* 2–4 mm.; bracts subulate-setaceous, as long as the calyx, or shorter. *Calyx* large, villous; lips short. *Petals* purple to white, subequal, 13 mm. long; carina subciliate. *Legume* villous, ovate.

(N. W. Amer., Chili); Patagon., by Rio Chubut, and confluence of RR. Neuquen and Limay.

12. ULEX Linn. Furze.

Shrubs, with stiff *spine-like branches and leaves*, and large, yellow, solitary or spiked *flowers*. *Calyx* deeply 2-lipped.

Stamens 10, monadelphous. *Legume* ovoid to linear. *Seeds* strophiolate. Fig. in Eng. & Prantl, iii, 3, p. 237, F.

Species 10, chiefly European.

U. NANUS Forst.

Decumbent, with glabrous, linear *leaves* and branches. *Bracts* minute, appressed. *Calyx* rather glabrous, its teeth lanceolate, distant.

(W. Eur.); Patagon.; immigrant to Brazil and Magellan; also in N. Afr. The European Furze (*U. europæus* L.) is now in the Cape, and in Australia, and in parts of the United States; it is a beautiful pest.

13. MEDICAGO Linn. Medic.

Herbs, with small, trifoliolate *leaves*, and small, yellow or violet *flowers* in axillary *heads or racemes*. *Leaf-veins* pinnate, ending in teeth. *Stamens* diadelphous, 1 and 9. *Legumes* curved or spirally twisted, 1–few-seeded.

Species 50, natives of the Old World.

1. M. HISPIDA Gaertn.

Glabrous. *Stems* procumbent. *Leaflets* obcordate, toothed; *stipules* ciliate-toothed. *Peduncles* 3–5-flowered. *Pods* cochleate, glabrous, 3-cycled, obliquely flexuose-nervose, marginally aculeate, the aculeæ long, hamate. *Seeds* reniform, subtruncate, yellow.

(S. Eur.)

M. HISPIDA DENTICULATA Willd.

Leaflets cuneate at the base. *Flowers* in short heads. *Legumes* spirally twisted, spiny on the edges, several-seeded.

(Eurasia, and adventive in N. Amer.); Patagon., by Rio Negro; and near Rawson (Dusén); Magellan.

2. M. LUPULINA Linn.

Leaflets narrowed or rounded at base. *Flower-head* oblong. *Legumes* curved into a partial spire, black, not spiny, 1-seeded.

(Eurasia and N. Amer.); N. Patagon., by Rio Negro; Magellan. (Dusén.)

3. M. MACULATA Willd.

Stems prostrate. *Leaflets* obcordate or obovate, dentate, spotted. *Stipules* dentate. *Peduncles* 3–5-flowered. *Legumes* cochleate on both sides, compressed, whitish, with 3–5-cycles, nervulose, with anastomosing spines. *Seeds* reniform, yellow.

(Europe); N. Patagon., by waysides along Rio Negro.

4. M. OBSCURA Retz.

Decumbent, annual. *Leaflets* rhombic, obovate, denticulate; the nerves prominent. *Stipules* lanceolate, deeply toothed. Racemes many-flowered. *Legumes* reniform or orbicular, cochleate, veiny, entire, glabrous, 2-seeded. *Seeds* reniform brown.

(S. Eur.); Magellan, "doubtless introduced." (Dusén.)

5. MEDICAGO SATIVA Linn. Purple Medic, Alfalfa.

Perennial, with violet flowers. *Leaflets* oblanceolate or obovate. *Stipules* entire. *Pod* coiled, hairy, not prickly.

(Eur., introduced into N. Amer.); Patagon., by Rio Sta. Cruz, Rio Chubut, and Rio Negro.

14. MELILOTUS Juss.

Herbs, with trifoliolate *leaves*, and small, white or yellow flowers in slender *racemes*. *Leaf-veins* pinnate, commonly ending in teeth. *Stamens* diadelphous, 1 and 9. *Legume* ovoid or globose, straight. *Seeds* 1 or few.

Species 20, of Old World; some naturalized in America.

M. INDICA All. (*M. parviflora* Desf.)

Stem ascending. Lower *leaflets* round-obovate, entire; upper oblong, obscurely toothed. *Stipules* linear-setaceous. *Flowers* yellow, small, densely spiked. *Legumes* ovate, wrinkled, greenish-yellow, 1-seeded. *Seed* ovate, rugose, brown.

(S. Eur.); N. Patagon., common by the RR. Negro and Limay.

15. TRIFOLIUM Linn. Clover, Trefoil.

Herbs, with trifoliolate *leaves* and *stipules* adnate to the petioles; and purple, pink or yellow *flowers* in heads or dense spikes. *Calyx-teeth* subequal. *Claws* of petals slightly united to the tube of the diadelphous (1 and 9) *stamens*. *Legume* oblong, 1–6-seeded.

Species 250, chiefly natives of N. Temp. zone; some in S. Afr. and S. Amer.

1. T. ARGENTINENSE Speg.

Glabrous perennial. *Stems* diffuse, rooting at the nodes, roots often thickish. *Leaflets* obovate, retuse, denticulate; *stipules* lanceolate, mucronate. *Flowers* all axillary, dimorphous; some hypogæan, cleistogamic; others on long scapes, capitate-pedicelled, at length deflexed. *Calyx-lobes* narrow, long, acute, the upper pair much connate. *Corolla* long-exsert, ochroleucous or pink, fragrant. *Legume* 2-seeded; the *seeds* subovoid, and subflavescent.

(Argentina, near La Plata); N. Patagon, by Rio Negro, rare.

2. TRIFOLIUM POLYMORPHUM Poir.

Villous, creeping. *Leaflets* obcordate, cuneiform, denticulate, nervose. *Stipules* broad with deflexed mucro. *Heads* subrotund, long-peduncled, axillary, at length deflexed. *Calyx-lobes* short, subtetragonal. *Standard* long.

(Argentina); Magellan.

3. T. REPENS Linn. White Clover.

Creeping perennial, nearly glabrous. *Heads* on long peduncles, globose, white or pinkish, 16 mm. in diameter. *Leaves* long-petioled; *leaflets* usually obovate, denticulate.

Temp. Eurasia, Nat. in Amer.; N. Patagon, by Rio Negro.

16. GALEGA Linn.

Glabrous, perennial herbs, with odd-pinnate *leaves*, entire, venous *leaflets*, semisagittate *stipules*, and white or blue *flowers* in both axillary and terminal bracted *racemes*. *Calyx-teeth* subequal. *Standard* obovate-oblong. *Keel* obtuse. Stamens 10, united in a closed tube. *Ovules* several. *Legume* linear-terete, acuminate, striate. *Seeds* transversely oblong.

Species 3. W. Asia and S. Eur.

G. OFFICINALIS Linn.

Leaflets lanceolate, mucronate. *Racemes* exceeding the leaves. (Fig. in Eng. and Prantl, iii, 3, p. 268, H.)

N. Patagon., banks of Rio Negro (introduced).

17. ASTRAGALUS Linn.

Herbs, sometimes woody, with odd-pinnate (rarely simple) *leaves*, and blue, violet, or yellow *flowers*, mostly in spikes or racemes. *Calyx-teeth* subequal. *Standard* erect, ovate or oblong. Wings oblong. *Keel* obtuse, equalling the wings. *Stamens* diadelphous (1 and 9), anthers all similar. *Legume* often ovoid, 1–2-celled, the sutures mostly intruding. *Seeds* several.

Species 1,000, most in N. Asia; many in W. and S. United States. (not in S. Africa or Australia).

(Includes sec. *Phaca*, often regarded as a distinct genus, having mostly yellow flowers, in lax racemes or solitary, and 1-celled legumes.)

KEY TO THE SPECIES.

A. Racemes capituliform.
- *b.* Leaflets acute, elliptical-lanceolate, plane. Low, silky, white. *chubutensis.*
- *b2.* Leaflets obtuse, sometimes notched.
  - *c.* Leaflets plicate.
    - *d.* Leaflets 6-jugous, elliptical-ovate. Flowers yellow. *ameghinoi.*
    - *d2.* Leaflets 7–10-jugous, obcordate. Flowers violet and yellow. *domeykoanus.*
    - *d3.* Leaflets small. Flowers ochroleucous. Pod narrow. *sanctæ-crucis.*
  - *c2.* Leaflets mostly plicate, oblong, 7–8-jugous. Pod inflated. *palenæ.*
  - *c3.* Leaflets oblong-cuneate, 7–9-jugous. Flowers violet and yellow. Pod compressed. *cruckshanksii.*

A2. Racemes short, few-flowered.
- *b.* Leaflets linear, plicate, falcate, 5–6-jugous. Flowers blue with yellow. Pod flat, silky. *patagonicus.*
- *b2.* Leaflets plane, cuneate, cloven, 5-jugous. Pod linear, refract. *tchuelches.*
- *b3.* Leaflets oblong, retuse, 6–10-jugous, hoary. Flowers purple, small. *arnottianus.*
- *b4.* Leaflets oblong-elliptical, 6-jugous, plicate. Pod oval-inflated. *brevicaulis.*
- *b5.* Leaflets oblong-obovate, 5–11-jugous, glabrous. Flowers white. Pod stiped, oblong. *pehuenches.*

A3. Racemes 6–10-flowered. Leaflets 7–10 jugous, linear-oblong, silky beneath. Flowers white, violet tips. (= *distinens*) *bergii.*

A4. Racemes 10–15-flowered. Leaflets 10-jugous, linear. Ashy. Stipules free. *rengifoi.*

A5. Raceme spiciform, many-flowered. Leaflets 9–13, narrow-linear, obtuse. Flowers yellow-white. *distinens.*

A6. Raceme apical on long peduncle. Leaflets 10–14-jugous, elliptical, obtuse. Flowers ruddy-yellow. *procumbens.*

A7. Ovary hoary. Young leaves lax-villous. *moyanoi.*

1. ASTRAGALUS AMEGHINOI Speg.

Euastragalus. Low, synochreate perennial, all *appressed-pubescent, hoary* or villous-silvery. *Branches* slender, procumbent. *Leaves* small, unequally pinnate, almost from the middle. *Leaflets* about 6 pairs, elliptic-obovate, complicate, obtuse. *Racemes* capituliform, the pedicel shorter than the subtending leaf. *Flowers* subsessile, small. *Calyx* almost all appressed-black-pubescent, 5-fid, the lobes narrow, acute, equalling the tube. *Corolla* glabrous, yellow (?), lightly surpassing the calyx; the vexillum and wings surpassing the keel.

Legumes almost sessile, subglobose, mediocre, rigid-coriaceous, densely hoary-villous, scarcely umbonate-apiculate, many seeded. Height 5–25 cm.; root subligneous, as long as the stem.

Patagon., in dry rocky places between San Julian and Rio Deseado, and by Golfo de San Jorge.

2. ASTRAGALUS ARNOTTIANUS (Gill. sub *Phaca*).

Appressed-pubescent, hoary. *Stems* cespitose, prostrate, short, leafy. *Leaflets* 6–10 pairs, oblong, retuse. *Stipules* membranaceous, pilose, united to middle. *Racemes* peduncled, short, scarcely as long as the leaf. *Flowers* purple, small; bracts minute. *Calyx* white, pilose. Legume ovate, inflated, subreticulate.

(Chili); N. Patagon., at confluence of RR. Limay and Neuquen.

3. A. BERGII Hieron.

Undershrub. *Stems* numerous, slender, appressed-hairy. *Leaflets* 7–10 pairs, linear-oblong, silky beneath, obtuse, 1 cm. by 2 mm. *Stipules* 5 mm., connate to middle. *Peduncles* twice as long as the leaves; *racemes* 6–10-flowered. *Calyx-teeth* subulate, with black and white hairs mixed. *Petals* white-violet, spotted at apex. (*A. distinens*, fide Speg.)

N. Patagon., by Rio Negro, by rocks near Rio Chubut.

4. A. BREVICAULIS Dusén. (*Phaca.*)

Low, hairy perennial. *Stems* numerous, slender, 15 cm. high. *Stipules* amplexicaul, entire, obtuse. *Leaflets* from middle of rachis, 6 pairs, 7 mm. long, petiolulate, linear to oblong-elliptic, conduplicate, emarginate, white-hairy beneath. *Peduncles* erect, about 5-flowered. *Pedicels* hooked, black-hairy, long bracteolate. *Calyx-teeth* long-triangular, black-hairy. *Legume* oval-inflated, with persistent style. (= *A. cruikschanksii* Griseb., 1877, non *Phaca cruckshanksii* Hook & Arn., 1833.)

E. Fuegia (Dusén).

5. A. CHUBUTENSIS Speg.

Low, cespitose, synochreate perennial, all *silky villous-white*. Branches very short, crowded. Leaves mediocre, erect, imparipinnate; stipules large, villous, bifid, with acute lobes. Rachis leafy about from the middle; leaflets elliptical or lanceolate, plane, subcoriaceous. *Racemes* capituliform, the subtending leaf 2–3 times as long as the pedicels. *Flowers* few, sessile; *calyx* fuscous downwards, hoary-villous, 5-cleft upwards; the

lobes linear-subulate, longer than the tube. *Corolla* bluish, a third exceeding the calyx; standard and wings clearly exceeding the keel. *Ovary* appressed, pubescent-hoary.

Patagonia, in dry places by Rio Chubut, near Lago Musters and Carren-leofú. Root 15–25 cm. long. Its acute, elliptical or lanceolate leaves distinguish it from *A. meyenianus* Speg. and *A. philippii* Speg.

6. ASTRAGALUS CRUCKSHANKSII (Hook. & Arn. sub *Phaca*).

Somewhat *robust*, decumbent, hoary or glabrous. *Leaflets*, 7–9 pairs, oblong-cuneate, obtuse or emarginate; *stipules* ovate, acuminate, the lower concrete. *Racemes* capitate, lax, longer than the leaf. *Flowers* rather large, yellow-violaceous, spreading. Bracts small. *Calyx* and *pedicels* black, appressed-pilose. Vexillum large; *legume* oblong, corneo-coriaceous, thick, compressed, transversely striate-reticulate, subpilose, with marginal sutures.

(Chilian cordilleras); Patagon., Golfo de San Jorge, Rio Sta. Cruz, Killik Aike (by Barnum Brown).

The *pubescence* of the calyx may be either white or black. Specimens from South Patagonia have the leaflets smaller and broader than the type (3.9 by 2.3 mm.), and more obtuse or nearly 2-lobed; calyx with white silky pubescence. *Legume* subacute both ways, glabrous, with the upper suture introflexed. (Speg.) Large handsome flowers and hard fruit.

7. A. DISTINENS Macl. (*Phaca distans* A. Gray, 1854, non *A. distans* Fischer, 1853.)

Slender, finely pubescent annual. Stipules ovate-subulate, partly united. Leaflets 9–13, narrow-linear, obtuse, involute when young. *Racemes* axillary, spike-like, many-flowered. *Pedicels* short, recurved. *Calyx* white-brown, hairy. *Corolla* yellow-white. *Legume* ovoid, sessile, 1 cm. long; the sutures slightly intruding.

N. Patagon., by Rio Negro.

8. A. DOMEYKOANUS (Ph.) Reiche. (*Tragacantha procumbens glabrescens* O. Ktze.)

Low, branching, suffrutescent, stems green. *Leaves* glabrescent, longer than the internodes, 3 cm., of which the petiole is one third. *Leaflets* 7–10 pairs, obcordate, plicate, notched at apex, sometimes with

divergent lobes, small. *Stipules* large, connate, oppositifoliose. *Flowers* 3–8 in a head. Bracts narrow. *Calyx* covered with black hairs, its teeth narrow, as long as its tube. *Corolla* 2–3 times as long, standard violaceous, wings yellow, twice as long as the keel. *Legume* ovate, apically attenuate, covered with black hairs.

(Chili); Chubut, in the mountains by Carren-leofú.

9. ASTRAGALUS MOYANOI Speg.

A. MOYANOI VILLOSULUS Speg.

Upper part of *stems* obsoletely pilose, and younger *leaves* lax-villous. *Ovary* ventrally hoary-pubescent.

Chubut, in dry hills near Carren-leofú.

10. A. PALENÆ (Phil.) Reiche.

Perennial, coriaceous, except the young parts. Mature *leaves* with appressed hairs. *Stem* slender, flexuose. *Leaves* 7 cm. long, the petiole one fourth of this; 7–8-pairs of oblong, obtuse, mostly plicate leaflets, 1 cm. long. *Stipules* connate as an oppositifoliose sheath. *Inflorescence* exceeding the leaf, capitate. *Rachis* and *calyx* with black hairs; calyx-teeth subulate, as long as the tube. Wings shorter than keel. *Flower-heads* at length arched downwards. *Legume* ovoid, inflated, with 12 seeds.

Chubut, in dry hills by Carren-leofú. Standard and apex of keel sky-blue.

A. PALENÆ GRANDIFLORUS Speg.

Taller than the species. *Leaflets* 10–12 pairs, obovate, complicate, apically emarginate-subtruncate. Flowers larger, 15–18 mm. long, *Ovary* always glabrous.

N. Patagon., dry meadows near Lago Nahuel-huapi.

11. A. PATAGONICUS (Phil. sub *Phaca*) Speg.

Perennial, multicipital, with white, silky *leaves*. Branches short; *stipules* scarious, connate, funnelform, sheathing. *Leaflets* 5–6 pairs, linear, plicate, falcate. *Peduncles* axillary, as long as the leaves; *raceme* short, 6-flowered. *Calyx* black, hirsute, its teeth subulate, rather short. *Corolla* blue, with some yellow, more than twice as long as the calyx. *Legume* silky, ashy and black, compressed-elliptical.

Patagon., on pampas by Coy Inlet (Peterson); Rio Sta. Cruz and Gallegos. Magellan, by valley of Lago Blanco, and Rio Chubut.

12. ASTRAGALUS PEHUENCHES Ndrln.

Phaca. Herb, from *thick root*, 15 cm. high, glabrous, leafy. *Leaflets* 5–11 pairs, rusty, petiolulate, oblong-obovate, obtuse, glandular, the young hairy. *Stipules* slender, free, acuminate, ciliate. *Peduncles* axillary, 3 cm. long, 4–5-flowered. *Bracts* small; bractlets smaller. *Calyx-teeth* acuminate, upper pair more remote. *Petals* white, twice as long; standard obovate. *Stamens* diadelphous, 1 free and 9 united halfway. *Stigma* capitate, style smooth. *Legume* oblong, glabrous, stipitate. *Seeds* 5.

N. Patagon., by Rio Negro.

13. A. PROCUMBENS Hook. & Arn.

Stem slender, procumbent, 30 cm. long, white-woolly especially upwards. *Stipules* large, oval, amplexicaul, scarious-yellow. *Petioles* long, weak, setaceous, villous. *Leaflets* 10–14 pairs, elliptical, obtuse, entire, villous below. *Peduncles* long, woolly, floriferous at apex. *Bracts* long, lanceolate, scarious. *Pedicels* black. *Calyx* hairy; its teeth long. *Corolla* ruddy-yellow. *Legume* triquetrous, pubescent. *Seeds* several.

N. Patagon., by Lago Nahuel-huapi.

14. A. RENGIFOI Phil.

Ashy, with sessile and appressed hairs. *Stems* various from the same root. *Leaves* 8 cm. long, the petiole being one fourth of this. *Leaflets* 10 pairs, linear, sometimes emarginate. *Stipules* free, long-triangular, with white hairs and a green midrib, a *row of black* hairs below them. *Inflorescence* exceeding the leaves, flowers 10–15, short-pediceled. Bracts very short. *Calyx* short tubular, with very short teeth, having black and white hairs. *Standard* twice as long as the calyx, bluish. Wings exceeding the keel. *Legume* nearly 2 cm. long, cylindrical, coriaceous, slightly curved, appressed-pubescent.

(Atacama.)

A. RENGIFOI LEIOCARPUS Speg.

(A young specimen.) Differing from the type by *absence* of the substipular *ring of hairs*, and by the *ovaries* being glabrous, and the (immature) *ovary* being narrower and longer.

N. Patagon., at confluence of RR. Limay and Neuquen.

15. Astragalus sanctæ-crucis Speg.

Suffruticose perennial, multicipital, stipules connate. All parts with minutely appressed, cinereous pubescence; branches short. *Stipules* minutely triangular, connate. *Leaflets* nearly to base of leaf, 6–8 pairs, glabrous above, plicate, obtuse, small. The axillary *peduncles* not exceeding the leaves, *capitately floriferous*. *Flowers* small. *Calyx-teeth* as long as the tube. *Corolla* ochroleucous. Pod narrow.

S. Patagon., at Monte Leon by R. Sta. Cruz.

16. A. tehuelches Speg.

Phaca, low, synochreate, glabrate to hoary; *branches* subprocumbent, terete. *Stipules* small, acutely bidentate. *Leaves* mediocre, one third part of the petiole naked, imparipinnate, with about 6 pairs of plane cuneate, bilobed *leaflets*, their lobes acute. *Racemes* axillary, not half as long as the subtending leaf, few-flowered. *Calyx* scarcely white-puberulous, 5-cleft, teeth subulate-acute, shorter than the tube. Corolla? *Legumes* refract, sublinear, triquetrous-scaphoid, acute both ways, with obtuse margins, pale-glabrous, scarcely nervulose.

Chubut, in sandy places along Rio Chico. Allied to *A. sanctæ-crucis*, but distinguished by the softer, larger, refract pods, and the flat leaflets resembling a goat's cloven-foot. (Speg.)

18. TRAGACANTHA Tourn. (Section of *Astragalus* in Eng. & Prantl.)

Low shrubs, like *Astragalus*, of which it is commonly regarded as a section. *Stigma* not hairy. *Hairs* of other parts simple. *Calyx* turbinate, with pointed base, sessile. *Pod* shorter than the calyx, 1-celled, mostly 1 seeded. *Leaves* odd-pinnate, or even-pinnate and the rachis then ending in a thorn. *Stipules* connate.

Species 150, chiefly in Mediterr. region to S. W. Asia. (Fig. in Eng. & Prantl, iii, 3, p. 295.)

T. procumbens glabrescens O. Ktze.

Glabrescent. Patagon.

19. GLYCYRRHIZA Linn. Licorice.

Herbs, with thick, sweet *roots*, odd-pinnate *leaves*, and spicate or capitate *flowers*. *Standard* narrow, short-clawed; *keel* shorter than the wings. *Stamens* diadelphous, 1 and 9, *anthers* alternately large and small. *Legume* sessile, prickly or glandular, continuous between the few *seeds*. (Fig. in Eng. & Prantl, iii, 3, p. 300, E, F.)

Species 15, N. Temperate; S. Amer. and Australia.

G. ASTRAGALINA Gill. & Hook.

Glabrous, but glandular. *Root* and stock creeping. *Leaflets*, 4–5 pairs, linear-oblong, retuse, mucronate. *Spikes* lax, axillary, on peduncles exceeding the leaves. *Flowers* blue. *Legume* moniliform, glabrous.

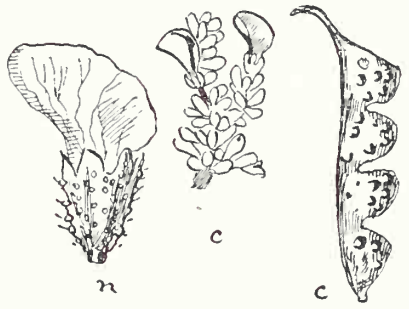
(Chili, whence it descends along the river valleys); Patagonia, from Bahia Blanca to Magellan. N. Patagon., at confluence of RR. Limay and Neuquen; at Carmen de Patagones; along Rio Chubut. Leaves obovate, spikes equalling the leaves. (Speg.)

The root tastes as licorice. "A decoction of the resinous leaves is administered to women after child-birth." "Curuzu; Milpi."

20. PATAGONIUM Schrank (*Adesmia* DC.).

Herbs or undershrubs, mostly unarmed, with odd- or even-pinnate, sometimes 2–3-foliolate, exstipellate *leaves*, and yellow, or red-striate *flowers*, solitary or in terminal or axillary racemes. *Bracts* small; no bractlets. (Fig. 75.)

FIG. 75.



Patagonium.—*c*, *c*, *P. carnosum*, flowering shoot and legume; *n*, *P. negeri*, flower. (After Dusén.)

Calyx-lobes subequal, or the lowest slightly longer; *standard* orbiculate, *keel* slightly shorter. *Stamens* free, but the two upper filaments often broad-based, and united to the standard. *Ovary* sessile; stigma small, terminal. *Legume* with straight upper suture, and sinuate lower. *Seeds* 2–several.

Species 90, in S. America, chiefly Andean; numerous in Patagonia though characteristic of a warm and dry climate.

(As the generic name has been only recently resurrected, most of the

specific descriptions have originally appeared under *Adesmia.*) Relatively to the fruit the genus has 3 sections, viz:

(1) *Leiocarpum:* Legumes glabrous, smooth or verrucose.

(2) *Dasycarpum:* legumes puberous, hispid or villous, with simple hairs.

(3) *Ptilocarpum:* legumes with villous or plumose setæ.

KEY TO THE SPECIES.

A. Unarmed, herbs or shrubs.

b. Flowers solitary in the axis.

c. Dwarf, subcespitose, silky villous. Leaflets 5–8 pairs. Flowers large, on long pedicels. (= *villosum?*) *morenonis.*

c2. Woody decumbent. Leaflets 3 pairs. Standard violet-lined. *parvifolium.*

c3. Woody diffuse. Leaflets 7–5 pairs, glabrous, small, retuse. Legume tomentose. *retusum.*

c4. Diffuse, woolly undershrub. Leaflets 3–5 pairs. Legume 3-jointed. *lanatum.*

c5. Prostrate, silky herb. Leaflets 5–7 pairs. Flowers large. Legumes 2–3-jointed. *villosum.*

c6. Appressed silky, with woody stem. Leaflets 2, sessile. *lotoides.*

c7. Viscid, creeping herb. Leaflets 3 5 pairs, ciliate-toothed. Legume 10-jointed hairy. *pumilum.*

c8. Low, snowy-silky. Leaflets 3. *suffocatum.*

c9. Leaves and pedicels long; leaflets 3–4 pairs. Flowers orange. Legume 4–5-jointed. *leptopodum.*

b2. Flowers solitary, terminal. Leaves fleshy, glabrous, trifoliolate.

c. Cespitose perennial, with crowded leaves. Flowers golden. Legume glabrous. *salicornioides.*

c2. Low with woody, leafless base. Flowers orange. Legume tubercled, hairy. *carnosum.*

b3. Flowers in axillary racemes, small.

c. Leaflets 6–7 pairs, emarginate, truncate. *affine.*

c2. Trifoliolate, smaller upwards. *trifoliatum.*

b4. Terminal raceme and axillary flowers. Leaflets 5–7 pairs, glandular. Legume 4–8-jointed, muricate. *muricatum.*

b5. Flowers in axillary and terminal racemes. Leaflets 10–15 pairs and terminal cirrhus. Legume 3-jointed, hairy-glandular. *boronioides.*

b6. Flowers in terminal racemes.

c. Leaflets 3 pairs, thick. Flowers 1–6 in raceme, orange. *ameghinoi.*

c2. Leaflets 3–5 pairs. Undershrub.

d. Standard silky. Hoary. *griseum.*

d2. Standard glabrous. White-tomentose. *candidum.*

c3. Leaflets 4 pairs, smooth. Flowers purple. *sylvestrii.*

c4. Leaflets 11–13, silky, small. Legume bristly. Annual. *filipes.*

c5. Leaflets 5–7 pairs, pubescent.

d. Legume 7 8-jointed, rough pendent. *pendulum.*
d2. Legume 3-jointed, with feathery bristles. *longipes.*
c6. Leaflets 13. Legume 3–4-jointed, glandular. *confertum.*
c7. Leaflets 7–8 pairs, obcordate, viscid-punctate. Legume 9–13-jointed. *retrofractum.*
c8. Leaf-rachis produced phyllodially. Racemes few-flowered, pedicels bracteolate. *graminidium.*
b7. The racemes terminal on the branches. Leaflets 3 pairs. Flowers orange. Legumes many-jointed. *tehuelchum.*
b8. Flowers paniculate. Leaflets 5–8 pairs and a terminal spine. Standard erect, maroon-colored. Legume silky, muricate. *mucronatum.*
b9. Racemes long, lax.
c. Leaflets 10–12 pairs, oblong, glabrous. Fruit 10-jointed, hispid. *latifolium.*
c2. Leaflets 4–11 pairs, linear-oblong, hoary. Fruit 2-jointed, hispid. *incanum.*
b10. Flowers minute, hidden. Leaves small, crowded; leaflets 4 pairs, subobovate. *aphananthum.*

A2. Spinescent shrubs.
b. Flowers solitary in the axils or fasciculate.
c. Low, cespitose, with black, subterraneous stem and ground-leaves. Hoary. Legume 4-jointed. *subterraneum.*
c2. Branching, hoary shrubs. Leaflets 5–6 pairs, thickish. Flowers orange, with red lines. Legume 4-jointed. *negeri.*
c3. Flowers on spinescent branches. Leaflets 2–3 pairs, thickish. Legume 1-jointed. *patagonicum.*
b2. Flowers in racemes.
c. Leaflets 4 pairs.
d. Erect, hairy; leaves fasciculate. *gracile.*
d2. Cespitose, hoary; old branches spiny. *karraikense.*
c2. Pubescent. Leaflets 3–5 pairs, small. Legume 3–5-jointed, bristly. *trijugum.*
c3. Leaflets 5–7 pairs, hoary. Black spot on pubescent standard. *pungens.*
b3. Flowers paniculate. Leaflets 4–6 pairs, hoary. Legume twisted, 3–4-jointed. *canescens.*

1. Patagonium affine (Hook. f.).

Unarmed; racemed; glandular-pubescent. *Stem* herbaceous, branching. *Leaves* odd-pinnate, with small stipules. *Leaflets* 6–7 pairs, petiolulate, linear-oblong, emarginate-truncate, obscurely ciliate-dentate. *Peduncles* axillary, long, naked. *Flowers* small, *calyx* equal at the base, its segments acute. *Standard* half exceeding the calyx.

Patagonia, from Bahia Blanca to Magellan.

2. P. ameghinoi (Speg.).

Unarmed. Perennial, low, cespitose. Leaves apically crowded, densely pubescent. *Leaflets* 3 pairs, obovate, thick, entire. *Flowers* apical, soli-

tary or 3–6-racemed; the peduncle exceeding the leaves, pubescent. *Calyx* hairy, green, with red; its teeth linear, obtuse, long. *Corolla* orange, little-exserted; vexillum dorsally pubescent.

S. Patagon., by Rio Sta. Cruz, and Gulf of San Jorge; dry hills near Nafofo-cahuellu.

3. PATAGONIUM APHANANTHUM Speg.

Dasycarpum. Low, *unarmed* perennial, all *hoary-hispidulous. Stems* many, laxly hemispherical, subcespitose. *Leaves* small, crowded towards the ends of the branches, the base of the petiole connate with the *stipules.* and folioliferous above the middle. *Leaflets* imparipinnate, 4 pairs and an odd one, obovate or oblanceolate, spreading, pilose-hispidulous.

Flowers very small and difficult to see, solitary in the axils and cernuous on moderate pedicels. *Calyx* 5-cleft beyond the middle, lobes acute, hoary-rough. Corolla lutescent, vexillum excepted, glabrous. *Legumes* very small, 2–3-jointed, basal joint glabrous, others rough.

Height 3–5 cm.

Chubut, at Teka-choique.

4. P. BORONIOIDES (Hook. f.).

Leiocarpum. Unarmed; racemed; suffruticose, glabrous, but with viscid, wart-like glands. *Stem* 45 cm. high; branches ascending, terete, articulate. *Leaves* long on thick petioles, ending in a cirrhus, and with inconspicuous *stipules. Leaflets* 10–15 pairs, small, sessile, broad-ovate, toothed, coriaceous. *Racemes* lateral and terminal, obtuse, the bracteoles short. *Calyx* broad-ovate, shortly 5-cleft, one third as long as the glabrous standard. *Flowers* 8 mm. long, yellow, streaked brown. *Legume* 3-jointed, glandulous.

Patagon., Rio Chubut; Puerto Deseado; Cape Fairweather; Upper Valley of Rio Gallegos (Nordenskj.); W. Patagon., by Lago Toro (Dusén); E. Fuegia (Ansorge). Not in S. Fuegia.

5. P. CANDIDUM (Hook. f.).

Unarmed; racemed, frutescent; white, with fine, appressed tomentum. Paniculately branched upwards, the branches terete. *Leaves* sparse, pinnate, on thickish, canaliculate petioles; with small, deciduous *stipules. Leaflets* 3–5 pairs, oval-oblong, rounded at both ends, coriaceous, entire, nerveless. *Racemes* lax, terminal, pendulous on short pedicels, bracteo-

late at their base. *Calyx* silky, its segments subacute. *Standard* twice as long, glabrous.

Leaves 18 mm., long; leaflets 4–8 mm., margins recurved.

Patagon., on the E. Coast.

6. PATAGONIUM CANESCENS (A. Gray, sub *Streptodesmia*).

Armed by spiny branches and panicles; hoary, intricately branching undershrub. *Leaves* even-pinnate. *Leaflets* 4–6, oblong or ovate. *Pedicels* short, curved. *Corolla* yellow, not twice as long as the calyx. *Legume* 3–6-jointed, becoming spirally twisted; its joints 2-valved, 1-seeded, falling separately.

N. Patagon., Rio Negro to Chubut.

7. P. CARNOSUM (Dusén).

Unarmed; not racemed, low, glabrous except the flowers. *Stem* 15 cm. high, thick, woody, branching, leafless below; sheathed by dark, rugose stipules; the *stipules* connate, fleshy, with short lobes. *Leaves* crowded, short-petioled, trifoliolate, fleshy, clavate, with short, fugacious tip. *Flowers* terminal, solitary, orange. *Calyx* campanulate, equally 5-cleft to the middle. *Corolla* 2–3-times as long, its standard suborbicular, white-pilose, enclosing the wings and keel. *Legume* 2–4-jointed, tubercular, white-pilose, bearing long, recurved remains of the style.

("Like *P. salicornioides* of Speg., but differing by the tubercular joints of the fruit.")

E. Fuegia (Ansorge). A steppe plant.

8. P. CONFERTUM (Hook. & Arn.) Reiche.

Unarmed; racemed; pinnate. *Leaflets* mostly 13, obovate-oblong, retuse, mucronate. *Raceme* terminal, many-flowered, with black glands. *Pedicels* 1–2 cm., deflexed in fruit. *Legumes* 3–4-jointed, rough-glandular.

Chili. Patagonia, Port San Julian; "apparently widely diffused between 33° and 50° S. Lat., on both sides of S. Amer." J. D. Hooker. Patagon.; (M. & T.)

9. P. FILIPES (A. Gray).

Unarmed; racemed; pinnate. Slender annual, pubescent, glandular, erect, branching. *Leaflets* 11–13, only 2–3 mm. long, oval, obtuse, gray-

ish, silky. *Raceme* terminal, long, few-flowered. *Corolla* yellow, twice as long as the calyx. *Legume* villous, with plumose bristles.

Patagon.; by Rio Negro, Rio Chubut, and by Rio Chico de la Sta. Cruz. (*P. furcatum* Phil. vide *P. karraikense* Speg.)

10. PATAGONIUM GRACILE (Meyen) Reiche.

Armed, racemed. Fruticose, the branches striate, pubescent. *Leaves* subfasciculate. *Leaflets* 4 pairs, obovate-elliptic, mucronulate, puberulous. *Raceme* short, ultimately spinose. *Calyx* hairy, its teeth long. *Legume* many-jointed; plumose.

(Chili; Arg., llanos at Rio Maipo at 3,000 meters elevation.) S. Patagon., by Rio Sta. Cruz.

11. P. GRAMINIDIUM Speg.

Ptilocarpum. Unarmed. Glabrous, green-subglaucous, perennial. *Stems* erect, divaricate, flexuose, subangulate-terete, laxly leafy. *Leaves* alternate, with short, ovate or lanceolate *stipules*. *Petioles* subterete, apically without a joint, produced in 2 narrow-linear, long *phyllodia* (?), armed between the leaflets with a small mucroniform point. *Racemes* acrogenous, few-flowered; *pedicels* bracteolate at the base, spreading, 1-flowered; flowers mediocre; *calyx* 5-cleft, muricate; *corolla* glabrous, yellow-testaceous. *Loments* often only 1-jointed; joint rather large, glabrous, but laxly setose-plumose.

Chubut, in dry rocks by Golfo de San Jorge.

12. P. GRISEUM (Hook. f.).

Unarmed; racemed; pinnate. Hoary-pubescent undershrub, with slender, flexuose branches. Petioles slender; *stipules* small, subulate. *Leaflets* 3–5 pairs, linear-obovate, obtuse, apiculate, entire, appressed, silky. *Racemes* subterminal, long, few-flowered. *Pedicels* short, basi-bracteolate. *Calyx-teeth* short, subulate. *Standard* twice as long, silky on the back. *Loments* cernuose, 6–8-jointed, with plumose setæ.

N. Patagon., and towards Buenos Aires; "common, especially in sandy ground, to 40 S. Lat." (J. Ball.) In sands at mouth of Rio Negro.

13. P. INCANUM (Vogel) O. Ktze.

Unarmed. Hoary-pubescent, and viscidulous-hispidulous. *Stem* suffrutescent, prostrate, branching; branches ascending, angulate. *Leaflets*

4–11-jugous, linear-oblong, sparsely pubescent. *Racemes* elongate, many-flowered. *Flowers* largish; calyx-teeth long. *Legume* 2-jointed, hispid. (S. Brazil); N. Patagon., by Carmen.

14. PATAGONIUM KARRAIKENSE (Speg.).

Armed; racemed; pinnate. Small, cespitose shrub; the old branches becoming naked and spiniform; the younger with crowded *leaves*, and short, terminal *racemes*. *Leaflets* from middle of petiole, 4-pairs, and an odd one, elliptic, entire, hoary. *Flowers* few, concealed in the upper leaves, orange. *Legume* 4–5-jointed, with long, white, feathery setæ.

A specimen in the Gray Herbarium is labelled *Adesmia furcata* Phil., but this name does not occur in Philippi's Catalogue, nor in the *Index Kewensis*, nor in Reiche's *Flora de Chile*.

S. Patagon., in rocks at Sierra de los Baguales.

15. P. LANATUM (Hook. f.) Reiche.

Unarmed, woolly undershrub, 15 cm. high, with diffuse, slender branches. Not racemed. *Stipules* slightly sheathing, with acute auricles upwards. *Leaflets* 3–5 pairs, linear-oblong, obtuse. Pedicels axillary, 1-flowered, shorter than the leaves. *Calyx* long, its teeth linear-subulate. *Standard* elliptic-oblong, tomentose on back. Style long. Legume 3-jointed. Seeds broad.

Patagon., Puerto Deseado; Magellan; by Rio Chubut, by Hatcher at Cordilleras of S. Patagon. Flowers purplish, leaflets glabrescent; other parts more or less woolly. Golfo de San Jorge. (Speg.)

16. P. LATIFOLIUM (Spreng. sub *Æschinomene*) O. Ktze.

Unarmed. Herb, with prostrate, rooting *stem;* petioles and racemes hispid. *Leaflets* 10–12-jugous, oblong, mucronate, glabrous. *Raceme* long, many-flowered. *Legume* about 10-jointed, hispid with rigid setæ. (S. Brazil, Montevideo); N. Patagon., by Carmen.

17. P. LEPTOPODUM (Speg.).

Unarmed; not racemed. *Stem* slender, glabrous. *Leaves* far exceeding the internodes; *stipules* ovate, connate-amplexicaul; petiole foliferous above the middle. *Leaflets* 3–4 pairs, sessile, lanceolate to elliptic-linear, acute both ways, entire. *Flowers* solitary, peduncle axillary,

slender, as long as the leaves. *Corolla* orange, glabrous, twice as long as the calyx. *Legume* 4–5-jointed.

S. Patagon., by Rio Chico de la Sta. Cruz. In meadows between S. Julian and Rio Deseado.

18. Patagonium longipes (Phil.) Reiche.

Unarmed; racemed. Small, branching perennial, with short pubescence. *Leaves* pinnate, 2–4 cm. long; *leaflets* 5–7 pairs on the upper two thirds; oblong-oboval, obtuse, 3–5 mm. broad. *Stipules* lanceolate, acute, 3 mm. *Racemes* short; pedicels 15–20 mm. long, slender. *Calyx-teeth* long. *Corolla* twice as long as the calyx. *Legume* 3-jointed, covered by long feathery bristles. N. Patagon.

19. P. lotoides (Hook. f.) Reiche.

Unarmed and not racemed. *Appressed-silky*, with woody stem, divided at the base. *Stipules* sheathing, with short diverging auricles. *Petiole* none. *Leaflets* 2, sessile, lanceolate, acuminate, all silky. *Peduncles* axillary, 1-flowered, 2–3 times as long as the leaf. *Calyx* silky, subequal at base, its teeth ovate-subulate, *corolla* orange. Margins of standard ciliate; a bearded callus on its unguis. Keel axe-shaped. *Style* long. *Legumes* 5-jointed.

Common over all Patagon.; Magellan; E. Fuegia (Dusén). All covered by malpighiaceous hairs; otherwise of the habit of *Lotus corniculatus* L.

P. lotoides vaginatum Hook. f.

Peduncle not as long as the longer leaves. *Standard* silky throughout. S. Patagon., by Puerto Deseado.

20. P. morenonis (Harms) O. Ktze.

Unarmed. Dwarf, subcespitose herb, villous, the young parts *silky*. *Leaflets* 5–8 pairs, villous-rough, oblong, with large, sheathing stipules. *Flowers* solitary, rather large, on long, rough pedicels. *Calyx-segments* rough, long-lanceolate. *Leaves* 3–4 cm. long.

At Killik Aike, Rio Gallegos (by Barnum Brown), S. Patagon. Stock suffruticose. ("= *Adesmia villosa* Hook. f." Speg.)

21. PATAGONIUM MUCRONATUM (Hook. & Arn.) Reiche.

Unarmed; racemed. Undershrub 6 cm. high, glandular-viscid. *Leaves* pinnate, with large subulate-lanceolate stipules, the rachis ending in a spine. *Leaflets* 5–8 pairs, oblong-lanceolate, mucronate, rigidly pilose. *Racemes* panicled. *Standard* erect, hairy outside, maroon-colored. Calyx hairy, its teeth acute. *Legume* linear-oblong, silky, muricate, 3–4-seeded.

(Chili); S. Patagon, by J. B. Hatcher at Rio Chico de la Sta. Cruz, Dec. 30, 1896.

22. P. MURICATUM (Jacq.) O. Ktze.

Unarmed. Decumbent, glandular-scabrid annual. *Leaflets* 5–7-jugous, obovate, emarginate, margin scabrid. *Pedicels* axillary and a terminal raceme. *Legumes* 4–8-jointed, joints muricate.

Chubut, in elevated meadows by Golfo de San Jorge.

23. P. NEGERI (Dusén).

Armed; not racemed. White-pilose shrubs, with the old branches covered by withering stipules. Branches passing into sharp spines. *Leaves* with connate stipules on the branchlets and spines; *leaflets* 5–6 pairs, oblong, entire, thickish, hairy. *Flowers* solitary in the axils, with white, spreading hairs. *Calyx* campanulate, its teeth triangular. *Corolla* orange, its standard with reddish lines, mostly enclosing other parts. *Legume* 4-jointed, with long, yellow hairs; tipped by the recurved style. Leaves 2 cm. long; leaflets 5 mm.

S. Patagon., Valley of Rio Gallegos. (Nordenskj.)

24. P. PARVIFOLIUM (Phil.) O. Ktze.

Unarmed. Suffruticose, low, sparsely puberulous. Stem much branching, decumbent. *Leaflets* trijugous, small, oblong-linear, narrower baseward, rounded apically; petioles naked half-way. *Stipules* leafy, oblong, acute, connate. *Peduncles* axillary, solitary, as long as the naked part of the petiole. *Calyx* shorter than the peduncle, its segments linear-lanceolate, as long as its tube. *Corolla* twice as long as the calyx. *Vexillum* violet-lined. Pod (?).

(Andes, near Linares); Patagonia.

25. P. PATAGONICUM (Speg.).

Armed; not racemed. Glabrous or hairy shrub; its many branches spinescent. *Leaves* few; *leaflets* 2–3 pairs, elliptical or obovate, remote,

thickish. *Flowers* sparse on the spinescent branches, on short peduncles. *Calyx*-teeth linear, shorter than the tube. *Corolla* exceeding the calyx, yellow. *Legume* small, 1-jointed, smooth.

S. Patagon., along Rio Sta. Cruz and Rio Chico. By Rio Chubut. (More tomentose forms approach *P. canescens* Gray.)

26. P. PENDULUM (DC.).

Unarmed; long-racemed. *Stems* diffuse, scarcely pubescent. *Leaves* pinnate; the *leaflets* 5–7 pairs, oval-oblong, entire, pubescent, nerveless. Lower flowers of *raceme* distant. *Flowers* yellow, reddish outside. *Legume* pendulous, 7–8-jointed, subhispid.

Argentina to N. Patagon. (?).

27. P. PUMILUM (Hook. f.) Reiche.

Unarmed; not racemed. Sparingly viscid-hairy, creeping herb, with short stem, 5–10 cm. long, and pinnate *leaves*, having broad, sheathing *stipules*, which are produced upwards as broad auricles. *Leaflets* 3–5 pairs, coriaceous, obovate-cuneate, obscurely ciliate-toothed, 6 mm. long. *Peduncles* 1-flowered, equalling the petioles; flower erect, incurved in fruit. *Calyx* campanulate, subequal at base. Standard twice as long, glabrous outside. *Style* long. *Legume* linear-compressed, about 10-jointed, crenate at the joints, pubescent. (Standard purplish; wings yellow).

S. Patagon., at Killik Aike near head of Rio Chico (Hatcher); Puerto Negro; Magellan; Fuegia.

28. P. PUNGENS (Clos.) Reiche.

Armed; shortly-racemed. Hoary shrub, with distorted branches, and short, crowded branchlets, having subulate spines. *Petioles* of the pinnate *leaves* produced apically. *Leaflets* 5–7 pairs, ovate to ovate-lanceolate, apiculate, small, entire, hoary. *Racemes* terminal on the branches. *Pedicels* short. *Calyx* campanulate; its teeth lance-linear, twice as long as the corolla. *Corolla* pubescent externally; *standard* with black spot. Legume (?).

(Chili.); Patagon. (?).

29. P. RETROFRACTUM (Hook & Arn.) Reiche.

Unarmed; large racemes. Glandular-hairy, with pinnate *leaves*. *Leaflets* 7–8 pairs, obcordate, obscurely toothed. *Standard* broad, striate,

overlapping the other parts. *Legumes* linear, 9–12-jointed, bristly glandular. A bush with viscid leaves. (Perhaps = *P. muricatum.*)

By Rio Gallegos (Barnum Brown). Patagon., along the coast south of Rio Sta. Cruz.

30. PATAGONIUM RETUSUM (Griseb.) Reiche.

Unarmed; not racemed. Diffuse undershrubs, 10 cm. high, green, sparsely pilose, with ascending, leafy branches. *Leaves* pinnate, with ovate, acutish stipules, as long as the short petiole. *Leaflets* 7–5(–3) pairs, very small, cuneate-obovate, retuse, plicate with midnerve, glabrous. *Peduncle* 1-flowered from the upper axils. *Calyx* campanulate, its teeth unequal, pubescent. *Standard* twice as long, puberulous outside towards base. *Ovary* tomentose; ovules several.

(Chili.) S. Patagon. (Hatcher. The peduncles are longer than the flower, and bear 1–4 flowers; the calyx and tomentose legumes are covered with black hairs; the legumes at length urceolate.)

31. P. SALICORNIOIDES Speg.

Unarmed. Cespitose, perennial, very fleshy and glabrous, with crowded *leaves. Stipules* subconnately sheathing, with ovate lobes; petiole short; *leaflets* 3, subterete, obovate. Apical branchlets, with solitary, sessile *flowers. Calyx-teeth* linear, obtuse, as long as the tube; *corolla* golden, twice as long as the calyx. *Pod* 1–3-jointed, naked, glabrous. Habit nearly of *Salicornia.*

S. Patagon., in rocky fissures near Lago Argentino; in rocks at Sierra de los Baguales.

32. P. SUBTERRANEUM (Clos.) O. Ktze.

Armed shrub, dwarf, with thick, tubercled, blackish, subterranean stems. Branches subterranean and subcorymbose. *Leaves* cespitose, crowded, scarcely emerging from the ground, appressed, hoary-pubescent; *leaflets* 2–3 pairs and a terminal, small, obovate-oblong, mucronate. *Flowers* few, very short, peduncled, immersed in the leaves. *Calyx* 3-cleft, the 2 lateral broad segments each 2-toothed. *Corolla* twice as long as the calyx. *Pod* exceeding the calyx, 4-jointed, silky.

(Chili); Patagon.

33. P. SUFFOCATUM (Hook. fil.).

Unarmed, low, cespitose shrub, silvery-silky. *Leaves* 2–3-foliolate, the *leaflets* obovate, conduplicate, enclosing the solitary, subsessile flowers.

Standard broad-orbicular, dorsally silky, its margins inflexed. Wings lobed, bearded inside. Fruit?

S. Patagon. at Puerto Deseado (by Charles Darwin); Chonkenk-aike, "abounding in sandy places, yet the legumes are unknown." (Speg.)

34. Patagonium sylvestrii Speg.

Unarmed. Ptilocarpum. Low, woody, perennial. *Branches* lax, about 12 cm. long, fuscous-brown, glabrous, laxly leafy. *Leaves* impari-pinnate, the petioles folioliferous from the lowest third. *Leaflets* usually obovate, thickish, entire, nerveless, glabrous or upper surface appressed and obsoletely puberulous. *Stipules* fuscous, their lobes short, acute, pallid on margin. *Racemes* often very long, flexuose, lax-flowered, black-purple, with a shorter pedicel. *Loments* 1-jointed, black-purple, with white plumose setulæ.

S. Patagon by Rio Sta. Cruz, near Lago Argentino.

35. P. tehuelchum (Speg.).

Unarmed; laxly racemed. Perennial, quasi-glabrous, really hispid. Branches subsimple, remotely leaf-bearing. *Leaflets* on upper half of petioles, 3 pairs, thick, spatulate. *Racemes* terminal on the branches. *Calyx-teeth* long. *Corolla* orange, twice as long. *Legume* many-jointed.

Chubut, in dry places near Lago Musters; S. Patagon., along Rio Scheuen, branch of Rio Chico.

36. P. trifoliatum (Gill.) O. Ktze.

Ptilocarpum. Unarmed; hoary-pilose, perennial, with many short branches from the crown of the root, 5–10 cm. high, often decumbent. *Leaves* 3-foliolate, alternate, becoming smaller and more crowded upwards. *Stipules* lanceolate. *Leaflets* elliptical-obovate, rounded, entire, green-hoary on epiphyll, white tomentose on hypophyll. *Racemes* axillary, shorter than the leaf, the lower half of the rachis bare, upper part crowded. *Flowers* refract, small; calyx hoary-villous, 5-toothed more than half-way down. *Corolla* slightly larger than calyx, the vexillum orange, dorsally purplish and villous, equalling the orange wings and keel. *Legume* refract-linear, 3–4-jointed, with few, plumose setulæ.

N. Patagon., near Fort Roca.

(*P. trifoliatum* (Ph.) Reiche, must be called *P. triphyllum* (Ph.) Speg., a Chilian form.)

37. PATAGONIUM TRIJUGUM (Gill.) Reiche.

Armed; racemed. Shrub, pubescent, or tomentose, or glabrous. Branches short, stout, intricate, their apex naked, repeatedly forking and spinescent; spines simple or strong and forking. *Leaves* fasciculate from tubercles, pinnate. *Leaflets* 3–5 pairs, small, ovate-cuneate, retuse or mucronate, entire or toothed, sessile. *Pedicels* racemosely crowded at the ends of the branches, rather long. *Calyx* long, its teeth narrow-lanceolate. *Legume* 3–5-jointed, covered with long, feathery bristles.

Patagon., mountains of Chubut; Puerto Deseado, Rio Sta. Cruz.

38. P. VILLOSUM (Hook. f.) Reiche.

Unarmed; not racemed. Soft-silky herb, 5–7 cm. high, with prostrate, ascending stem and pinnate *leaves*. *Stipules* rather large, produced upward into auricles. *Leaflets* 5–7 pairs, obovate-cuneate. *Pedicels* shorter than the petioles, axillary, 1-flowered. *Flowers* large. *Calyx-teeth* long, linear-subulate. *Standard* slightly exceeding the calyx. *Style* long. *Legume* 2–3 jointed, hairy.

S. Patagon., Puerto Deseado; Rio Chico. By Rio Chubut and Lago Musters.

P. villosum typicum Speg. All rufescent-villous. Leaflets obtuse or emarginate.

P. villosum acutifolium Speg. All ashy-villous. Leaflets oblanceolate, acute, entire.

P. villosum glabratum Speg. Branches, petioles and leaflets glabrous; pedicels and calyx ashy-villous. Killik Aike (by Barnum Brown).

21. VICIA Linn. Vetch.

Climbing or trailing herbs, with tendril-bearing, pinnate *leaves* (the terminal tendril sometimes represented by a small setula), semisagittate or entire stipules, and axillary, sessile or racemed, blue, violet, or yellow *flowers*. Calyx-tube slightly oblique, the teeth equal, or the posterior pair longer. *Standard* obovate or oblong, emarginate, clawed. *Wings* adhering to the shorter keel. *Stamens* diadelphous, 1 and 9, or all united below. *Style* tufted near the tip. *Ovules* several. *Legume* flat, dehiscent.

Species 120, widespread in Temperate regions. "Their Southern limit is in the Strait of Magellan; and they are more on the West than on

the East coast." (J. D. Hooker.) Not native in Argentina, nor in Australia.

KEY TO THE SPECIES.

A. Peduncles 1-flowered. Stipules semisagittate.
  b. Leaflets 1 pair, rarely 2 pairs, long-linear, glabrous. *magellanica.*
  b2. Leaflets 2 pairs, small, obovate, setula instead of cirrhus. *bijuga.*
  b3. Leaflets 2–3 pairs, linear mucronate. Cirrhi undivided. *solisi.*
A2. Peduncles 1–2-flowered. Stipules semisagittate.
  b. Leaflets 1–2 pairs, obovate, oblong, silky. Cirrhus undivided. *patagonica.*
  b2. Leaflets 3–5 pairs, grass-like. Cirrhus branching. *graminea.*
A3. Peduncles 2-flowered. Leaflets 3–4 pairs, narrow-linear, acuminate. Cirrhus undivided. Stipules narrow. *hookeri.*
A4. Flowers in pairs in axils. Leaflets 2 pairs, oblanceolate, silky. Cirrhus undivided. Stipules ovate. *sericella.*
A5. Peduncles 2–4-flowered. Leaflets 2 pairs (1 pair), linear. Stipules semisagittate. All glabrous. *morenonis.*
A6. Peduncles 3–5-flowered. Leaflets 5 pairs, oblong-basicuneate, mucro instead of cirrhus. Stipules ovate-lanceolate. *cirrata.*
A7. Peduncles 4–5-flowered. Leaflets 4 pairs, oblong-linear. Cirrhus sometimes divided. Stipules semisagittate-subulate. Pubescent. *vicina.*
A8. Peduncles many-flowered. Stipules semisagittate.
  b. Cirrhi undivided. Leaflets 5 pairs, elliptical. Flowers violet. *darapskyana.*
  b2. Cirrhi divided.
    c. Leaflets 6–9 pairs, elliptical. Flowers yellow, with purple. *macraei.*
    c2. Leaflets 9–10 pairs, oblong-elliptical. Flowers crowded. Calyx-teeth only 2. *nigricans.*

1. VICIA BIJUGA Gillies. (Plate XX.)

Perennial, prostrate, cespitose. *Leaflets* 2 pairs, small, obovate, retuse, not mucronate, sparsely subvillous; with short *setula* ending the rachis. Otherwise like *V. solisi*, but distinct. *Stipules* semisagittate, ovate, without a nectary. *Peduncles* short, puberulous, jointed near their base, 2–3 mm. long, lax. *Calyx* turbinate, puberulous, its teeth subequal, triangular. *Corolla* 6–7 mm. long, ochroleucous. *Ovary* linear, glabrous, 6-ovuled.

(Argentina); S. Patagon., by Rio Chico.

V. BIJUGA LONGIPES Speg.

Lower *leaves* obovate, obtuse, mucronate. *Peduncle* at first short, lengthening after anthesis.

S. Patagon., near Rio Sta. Cruz and R. Scheuen. On pampas by Coy Inlet (O. A. Peterson, "bluish-white" Nov. 18, 1896.) Determined in Royal Gardens, Kew.

2. VICIA DARAPSKYANA Phil.

Pubescent. *Stem* angulate, flexuose, internodes short. *Leaflets* about 5 pairs, elliptical, obtuse, alternate; *cirrhi* simple and bifid. *Stipules* semisagittate, angulate-dentate. Peduncles thick, twice as long as the leaf, many-flowered, in a long, dense raceme. Upper and lateral teeth of the *calyx* narrow, subreflexed, lowest subulate, not as long as the tube. *Corolla* thrice as long as calyx, dry, violet.

Leaves 5 cm. long; stem 1 mm. thick.

(Mountains near Parret); Patagon.

3. V. ECIRRATA Phil.

Annual; appressed-puberulous. *Leaves* with a moderate *mucro* in place of cirrhus; leaflets 5 pairs, oblong, basi-cuneate, obtuse or mucronate. *Stipules* ovate-lanceolate, acuminate. *Peduncles* as long as the leaf, 3–5-flowered. *Calyx-tube* turbinate, its 5 teeth subulate filiform, twice as long as the tube. *Corolla* equal to calyx.

(At Rio de las Nalcas "of some southern province.") Reiche refers this to the Lentil, *Lens esculenta* Mnch., which differs from *Vicia* by its long calyx-teeth, small blue-white petals, and oval, 1–2-seeded pod. Presumably introduced.

4. V. GRAMINEA Smith. (*V. Kingii* Hook. f.)

Sparsely pilose. *Stem* subsimple, angulate, 60 cm. high. *Stipules* semisagittate, the lobules deflexed, the apex acuminate. *Petioles* long, compressed, ending in a branching tendril. *Leaflets* 3–5 pairs, linear-obovate-oblong, entire, apiculate, the apex obtuse or 2-toothed. *Peduncles* silky, 1–2-flowered, much shorter than the petioles. *Calyx* short, silky, its teeth acute. *Immature* legumes pendulous, glabrous.

(Montevideo, Commerson, 1767.) Patagon., by Rio Negro; near Rawson (Dusén); Magellan, Fuegia, at Ushuaia on the Beagle Channel. "*V. kingii* Hook. f. is a depauperate *V. graminea* Smith." A. Franchet in Miss. Sci. du Cap Horn, Bot., p. 330.

(Hook. f. observes of *V. bidentata* Hook. of Chili, *V. graminea*, and *V. patagonica*, that *V. bidentata* is entirely smooth, with leaflets broader and shorter, stipules twice as broad as in *V. graminea*, and tendrils simple; *V. patagonica* agrees with *V. bidentata* in these points except the simple

tendrils, and is also distinguished by having few broad leaflets and differently shaped stipules and short, erect petioles.)

5. VICIA HOOKERI Don. (*V. micrantha* Hook. & Arn.)

Annual, villous; *leaflets* 3–4 pairs, narrow-linear, acuminate. *Tendrils* simple. *Stipules* semisagittate, linear, entire. *Inflorescence* shorter than the leaves and with 2 small flowers, 5 mm. *Calyx* short, campanulate, teeth lanceolate, as long as the tube. *Legume* compressed, lanceolate, the sutures hairy. Seeds 6.

Valdivia; Chubut, by Carren-leofú. The Chubut specimens are small, leaflets linear, 3-jugous, pedicels 1-flowered, just surpassing the leaves, calyx-teeth short. (Speg.)

6. V. MACRÆI Hook. & Arn.

Pubescent. *Stem* prostrate, angled. *Leaflets* 6–9 pairs; elliptical, obtuse, shining underneath. *Cirrhi* divided. *Stipules* semisagittate, deeply angulate-toothed. *Peduncles* as long as the leaves, crowded, many-flowered. *Calyx-teeth* short, subequal, the lower slightly larger. *Petals* yellow, purple-variegated. *Legumes* deflex, oblong, glabrous, with long, hairy style.

(Chili, cordilleras); Patagon.

7. V. MAGELLANICA Hook. f.

Glabrous. *Stem* slender, angulate, flexuous, sparsely leafy. *Stipules* semisagittate, their apex and lobule acuminate. *Leaves* remote. *Petioles* long, ending in a cirrhus; *leaflets* 1 pair, rarely 2 pairs; linear-elongate, acuminate. *Pedicels* axillary, solitary, 1-flowered, shorter than the leaf. *Calyx* pubescent, with subulate teeth. *Standard* twice as long.

S. Patagon., near Rio Chico: Magellan, E. Fuegia. (Dusén, chiefly in thickets.)

"*V. magellanica*, *saffordi*, *patagonica*, and *andicola* have pubescent peduncle and calyx, and may be all the same. *V. graminea* is different." (Spegazzini.)

8. V. MORENONIS Harms.

Stem glabrous, flattened-angular. *Leaflets* 4, opposite, subsessile, linear, with a short, obtuse apex. *Stipules* small, semisagittate. *Peduncles*

2–4-flowered, glabrous, with short pedicels. *Calyx* companulate, its teeth broad-ovate, shorter than the tube, acute. *Ovary* glabrous.

Patagon.

VICIA MORENONIS BURMEISTERI O. Ktze. (?).

Leaflets 1-pair.

Patagon.

9. V. NIGRICANS Hook. & Arn.

Pubescent. *Stem* tetragonal. *Leaflets* 9–10, oblong-elliptical, obtuse, alternate; the *cirrhi* divided. *Stipules* semisagittate. Peduncles twice as long as the leaf, many-flowered, the flowers crowded. *Calyx-teeth* 2, the upper obsolete, the lowest subulate, the mid-one exceeding the tube. *Stigma* bearded.

(Chili); N. Patagon., near Lago Nahuel-huapi.

10. V. PATAGONICA Hook. f.

Sparsely pilose. *Stem* erect, angulate, but scarcely winged, sparingly branching. *Stipules* semisagittate, sometimes toothed, their apex and lobule acute. *Leaves* suberect; petiole rather short, angled, with a simple terminal tendril. *Leaflets* 1–2 pairs, alternate and opposite, obovate-oblong, entire, obtuse or retuse, or toothed, silky on both sides. *Peduncles* exceeding the petioles, silky, 1–2-flowered. *Calyx* silky, one third the erect standard.

(See note on *V. graminea.*)

S. Patagon., by Rio Chico; Magellan, E. Fuegia. (Dusén.)

V. PATAGONICA DEPAUPERATA.

S. Patagon., near Rio Deseado, and Isla Pavo by Sta. Cruz.

11. V. SERICELLA Speg.

(*Cracca.*) Perennial, silky, low, prostrate. *Leaves* shorter than the internodes. *Stipules* ovate. *Cirrhus* simple. *Leaflets* mostly 2 pairs, oblanceolate, acutish both ways. *Flowers* of mid-size, mostly in pairs in the upper axils. *Standard* blue, thrice as long as the calyx, and longer than the whitish wings. *Ovary* glabrous.

N. Patagon., valley of Lago Blanco; in Sierra de los Baguales.

VICIA SERICELLA GLABRATA Speg.

Glabrate, rigid. Stipules semiovate, rounded at base. Dry meadows by Rio Chubut.

12. V. SOLISI Phil. (*V. saffordi* Phil.)

Low, branching annual, 15 cm. high, *scarcely* pubescent. *Leaflets* 2–3 pairs, linear, narrower upwards, mucronate. *Cirrhi* simple. *Stipules* narrow, semisagittate, their lobule acuminate. *Peduncle* axillary, short, 1-flowered. *Calyx-teeth* shorter than the tube, cuspidate-triangular. *Corolla* twice as long as calyx.

(Chili); S. Patagon., by Rio Chico; Magellan (Safford); E. Fuegia (Dusén).

"*V. saffordi* and *V. sericella* are allied to *V. bijuga*, but distinct." (Speg.)

13. V. VICINA Clos.

Slightly pubescent, with weak, tetragonal stem. *Leaves* 3–4 cm. long, with about 4 pairs of *leaflets*, often not very opposite, oblong-linear, mucronate, pubescent underneath. *Tendrils* simple or divided. *Stipules* semisagittate-subulate, the auricle weak, horizontal. Inflorescence as long as the leaves, 4–5-flowered. *Calyx* pubescent, the teeth subulate-lanceolate, shorter than the tube. *Corolla* 2–3-times as long as the calyx, light blue. *Ovary* pubescent.

(Chili); Chubut, in fields along Carren-leofú.

V. vicina tricolor; flowers 10 mm.; vexillum and wings blue, orange and white succeeding basewards. Leaves often narrow.

V. vicina azurea; flowers blue; leaves larger and broader and obtuser.

V. vicina pallidiflora; flowers whitish; leaves mediocre.

V. vicina luteiflora; flowers only 6–8 mm. long, somewhat orange, keel yellow; leaves mediocre.

22. LATHYRUS Linn.

Herbs, rarely erect, with pinnate, mostly tendril-bearing *leaves*, and racemose or solitary *flowers*. Characters of *Vicia*, but the *calyx* is mostly oblique, its upper *teeth* shorter, and the *style* is curved, flattened and hairy along its inner side.

Species 110, distributed as *Vicia*.

KEY TO THE SPECIES.

A. Stipules semisagittate.
b. Peduncles 1-flowered. Stem winged.
c. Leaflets 1 pair, linear. Cirrhi entire, or divided. Hairy. *campestris*.
c2. Leaflets few (2) pairs, linear-oblong. Cirrhi 3–4-cleft. Pods reticulate. Glabrous. *cicera*.
b2. Peduncles 1–3-flowered. Leaflets 1 pair, linear, acute. Cirrhi very short, stipules long. Stem filiform. *subulatus*.
b3. Peduncles 4-(2–1-) flowered. Leaflets 2–4, linear, or linear-oblong, parallel-veined. Silky. *sericeus*.
b4. Peduncles many-flowered. Leaflets successively 1–4 pairs. Cirrhi a point below, long and divided above. *macropus*.
b5. Leaflets 2. Flowers rather large. Silvery, becoming rufous. *tomentosus*.
b6. Peduncles 6–12-flowered. Leaves 1-ranked. Leaflets 1 pair. Cirrhi undivided. Corolla large, golden. *pubescens*.
A2. Stipules triangular-semisagittate, long. Leaflets linear-lanceolate. Cirrhi trifid. Peduncle 4–8-flowered. *epetiolaris*.
A3. Stipules lanceolate to semi-sagittate. Leaflets 1 pair, linear-oblong, acute. Cirrhi sometimes divided. Peduncles 6–12-flowered. Flowers yellow. *pratensis*.
A4. Stipules sagittate. Leaflets 1 pair, ovate, acute. Cirrhi trifid. Peduncles many-flowered. *nervosus*.
A5. Stipules semi-hastate, large. Leaflets 3–6-pairs, oblong-obovate, mucronulate. Cirrhi branched. Peduncle 6–10-flowered. Purple. *maritimus*.
A6. Stipules ovate-sagittate, large, with large auricle. Leaflets, linear-lanceolate. Peduncles 1-(2-) flowered. *stipularis*.
A7. Stipules ovate, apically 2-lobed. Leaflets few (to 1 pair), elliptic-oblong to lanceolate. Cirrhi trifid. Peduncles 3–4-flowered. *magellanicus*.

1. LATHYRUS CAMPESTRIS Phil.

Pubescent with weak, winged *stem*, 20–30 cm. high. *Leaflets* 1 pair, linear. *Tendrils* simple or divided. *Stipules* semisagittate, longer than the petiole. *Peduncles* 1-flowered, slightly shorter than the internodes. *Calyx* pubescent, its teeth lanceolate-subulate, just longer than the tube. *Legume* linear, pubescent. *Seeds* 7–9.

Valdivia; Chubut by Carren-leofú.

2. L. CICERA Linn.

Rather glabrous annual, with winged *stems* and linear-oblong *leaflets*, cirrhi 3–4-cleft. *Stipules* semisagittate, lanceolate, subciliate, as long as the petiole. *Peduncles* 1-flowered; bractlets minute. Calyx-teeth thrice as long as the tube. Pods reticulate. Seeds trigonal, subtruncate, brown, smooth.

(Europe.)

LATHYRUS CICERA PATAGONICA Speg.

Stems scarcely angled at base, 3-winged upwards. Stipules leaf-like, entire; *leaflets* 2, linear-lanceolate, entire, pale underneath. *Corolla* yellowish and glabrous, scarcely equalling the calyx-teeth. *Pod* erect, glabrous, about as long as the leaflets, 8–12-seeded, its apex rostrate-incurved.

N. Patagon., escaped.

3. L. EPETIOLARIS Clos.

Perennial, smooth, blackish in drying. *Stems* 1–2 meters high, tetragonal, scarcely winged. *Leaves* short-petioled; *leaflets* linear-lanceolate, 5–7 cm. long. *Tendrils* long, trifid. *Stipules* triangular, semisagittate, 3–4 times as long as the petiole. *Inflorescence* 10–15 cm. long, 4–8-flowered at its end. *Calyx-teeth* linear-acute, exceeding the tube, and the lowest the longest. *Corolla* purple-violet. *Legume* linear, compressed, as large as a leaflet, smooth. *Seeds* numerous.

(Chili); Chubut, by Carren-leofú. "The Patagonian forms have the stipules sagittate, not semisagittate." (Speg.)

4. L. MACROPUS Gillies.

Robust plant, laxly pubescent, *stem* angulate and striate. Lower *leaves* with 1, the upper successively with 2–4 pairs of lanceolate *leaflets*, ending in a stiff point. *Stipules* semisagittate, linear-lanceolate, in the upper leaves shorter than the petioles. *Tendrils* of upper leaves long and parted. *Inflorescence* 3–4 times as long as the leaves. *Flowers* numerous, the rachis and calyx pubescent. *Calyx-teeth* acuminate, one of them subulate. *Corolla* large, blue (?). *Legume* unknown.

(Chili); Chubut, by Carren-leofú (stipules of these sagittate, not semisagittate).

5. L. MAGELLANICUS Lam.

Glabrous, blackish, suberect. *Stipules* broad-ovate-oblong, ending in 2 divaricate lobes. *Cirrhi* trifid. *Leaflets* 1 pair, 25–50 mm. long, elliptic-oblong or lanceolate, apiculate, 3–5-nerved. *Peduncle* longer than the leaf, with 3–4 flowers towards its apex.

A beautiful vetch, loving the sea-coast.

N. Patagon., by Nahuel-huapi; Magellan, N. and E. Fuegia. (Dusén.)

LATHYRUS MAGELLANICUS GLADIATUS (Hook.) O. Ktze.

Leaflets very narrow, acuminate.

Patagon.

L. MAGELLANICUS GLAUCESCENS Speg.

Plant green-glaucescent, not black in drying. *Leaflets* often elliptical-mucronulate, nervulose.

S. Patagon., by Rio Sta. Cruz, R. Gallegos.

L. MAGELLANICUS OXYPHYLLUS Speg.

Low, glabrous, green-glaucescent. *Stipules* sagittate, elongate. *Leaflets* 1 pair, lanceolate or longer, long-mucronate.

At Killik Aike, by Barnum Brown.

L. MAGELLANICUS SUBSESSILIFOLIUS O. Ktze.

Petioles of all the leaves 5 mm. long.

Patagon.

6. L. MARITIMUS Big.

Glabrous, stout, decumbent; *stems* angulate. Stipules large, semi-hastate. *Leaves* subsessile, *cirrhi* branched. *Leaflets* 3–6 pairs, oblong-obovate, mucronulate. *Peduncles* short, with 6–10 purple flowers. *Legume* linear-oblong, veiny.

(Eurasia and N. Amer.); Cape Tres Montes.

7. L. NERVOSUS Lam.

Glabrous. *Stems* subsimple, striate. *Petioles* very short; cirrhi trifid; *stipules* sagittate, nervose. *Leaflets* 1 pair, ovate-acute, veiny, exceeding the internodes. *Peduncles* many-flowered. *Legumes* linear, long, glabrous.

(Montevideo); S. Patagon., Valley of Rio Gallegos (Nordenskj.); var. by Rio Sta. Cruz.

8. L. PRATENSIS Linn.

Weak, straggling perennial, mostly glabrous. *Stems* sharply angulate. *Stipules* lanceolate to semisagittate, nearly as long as the leaflets. *Leaflets* 1 pair, linear-oblong, acute. *Cirrhus* simple or branched. *Racemes*

exceeding the leaves, with 6–12 yellow flowers. *Legumes* linear, glabrous, veiny.

(Eurasia and N. Amer.), S. Patagon., by Rio Chico de la Sta. Cruz. (Hatcher.)

9. LATHYRUS PUBESCENS Hook. & Arn.

Stem tetragonal or 2-edged, winged, slightly puberulous. *Leaves* 1-ranked; *stipules* semisagittate, scarcely as long as the petiole; *cirrhi* long, simple. *Leaflets* 1 pair, large, narrow-lanceolate. Peduncle scarcely exceeding the internode, pubescent upwards, 6–12-flowered. *Calyx* pubescent, teeth acute. *Corolla* thrice as long, golden. Young *legume* linear, flat, tomentose.

Through all Patagonia and Chonos Archipelago to Bolivia. "Alverjilla."

10. L. SERICEUS Lam. (*L. tomentosus* Vog. non Lam.)

Rather *stout* and woody, tomentose-silky. *Stem* 4-angled, striate. *Leaves* ending in a stout, simple tendril. Stipules semisagittate, equalling the leaflets and exceeding the petiole. *Leaflets* 2–4, linear or linear-oblong, paralled-veined. *Peduncles* mostly 4-flowered, or 1–2-flowered. *Legume* linear, 3–5 cm. long, rather inflated.

N. Patagon., by Rio Negro and northwards.

11. L. STIPULARIS Presl.

Smooth, with weak, tetragonal *stem*. *Leaflets* linear-lanceolate, mucronate. *Stipules* large, ovate-sagittate, with long, descending auricles, narrow, acute. *Peduncles* 1-(2-)flowered, at first shorter than the stipules, at length elongating.

Patagon., by Rio Chubut and Carren-leofú.

L. STIPULARIS PATAGONICUS Speg.

Leaflets more acute and smaller.

12. L. SUBULATUS Lam.

Pilose. *Stems* cespitose, filiform, tetragonal. *Leaves* shortly petiolate, with very short tendrils. *Leaflets* 1 pair, linear, acute. *Stipules* semisagittate, linear, nearly as long as the leaflets. *Peduncles* 1–3-flowered.

Calyx-segments narrow, acute, subequal, as long as the tube. *Flowers* purple, not large.

(Montevideo; Argent.); Patagon.

13. LATHYRUS TOMENTOSUS Lam.

Rufous-tomentose perennial, with tetragonal, striate *stem*. Leaves with petioles exceeding the 2 leaflets, and semisagittate stipules shorter. *Calyx-teeth* subequal, lanceolate. *Legumes* linear, silky.

Styles long, contorted at base, linear-spatulate.

(Argentina); Patagon., near Rawson (Dusén); in N. Patagon., near Rio Colorado. Appressed-pubescent, silvery when living; larger plant, subscandent, with larger flowers than *L. sericeus* Lam.

23. RHYNCHOSIA Lour.

Mostly trailing or climbing perennials, with 1–3-foliolate *leaves*, having no *stipels*, and with yellow, axillary, *racemed* flowers. *Leaflets* usually resinous-dotted. *Calyx* 4–5-lobed, slightly 2-lipped. *Keel* incurved at the apex, or falcate. *Stamens* diadelphous, 1 and 9. *Legume* short, 1–2-seeded.

Species 100, in warm and temperate regions.

R. SENNA Gill.

Puberulous; stem scarcely twining, terete. *Stipules* subulate, rigid. *Leaflets* 3, broad-ovate, mucronate, subcordate, 3-nerved, pinnately veined, the lateral ones smaller, as long as the petiole. *Peduncles* solitary in the axils, rarely 2, each 1-flowered, exceeding the petioles. *Calyx-segments* subulate, as long as the petals. *Legume* oblong, attenuate downwards, velvety.

(Argentina); N. Patagon., by Rio Negro. A variety with broad ovate leaflets extends from Texas to the borders of Patagonia.

Family 53. GERANIACEÆ. Crane's-bill Family.

Herbs, with alternate or opposite, usually stipulate, *leaves;* and axillary, hermaphrodite *flowers*, having hypogynous, 5-merous *calyx* and *corolla*, the petals not united. Stamens as many, or 2–3 times as many, as the

petals. *Carpels* usually 5, around a central axis, each 1–2-seeded. *Styles* joined with the axis, so as to form a beak.

Species 450, in temperate regions; most in South Africa.

KEY TO THE GENERA.

1. Stamens 10, sometimes 5. Styles not hairy on inside. *Geranium.*
2. Stamens 5. Styles bearded on the inside. *Erodium.*
3. Stamens 10. Style very short. Calyx involucrate. *Wendtia.*

1. GERANIUM Linn. Crane's-bill.

Leaves palmately lobed or divided. Peduncles 1–2-flowered. Flowers regular. Stamens 10 (rarely 5), usually alternately unequal. Carpels 2-ovuled, becoming 1-seeded in fruit. Styles naked on the inside, at length breaking away upwards from the axis and suspending the mericarps.

Species 170, in temperate regions, and on tropical mountains. Found southwards as far as the Strait of Magellan, and a few in Australia and New Zealand.

KEY TO THE SPECIES.

A. Stemless, with 1-flowered scapes and reniform, 5–7-partite leaves.
  b. Scape short, velvety. Leaf-segments 3–5-cleft. *acaule.*
  b2. Scape very short; it and the calyx silvery. *sessiliflorum.*
A2. Stems short. Leaves 5-partite, the parts 3-cleft. Peduncle rather long, 1-flowered. *moorei.*
A3. Stems prostrate, numerous from a fusiform root. *andinum.*
A4. Stems developed.
  b. Flowers geminate.
    c. Leaves opposite, semi-orbicular, partite. *melanopotamicum.*
    c2. Leaves rounded.
      d. Leaves 5-lobed, lobes 5-cleft. Villous. *berterianum.*
      d2. Leaves 5–7-partite, the parts 3–5-cleft. Petals shorter than calyx. *dissectum.*
    c3. Leaves 7–8-lobed, repeatedly trifid. Petals exceeding the calyx. *core-core.*
  b2. Stem-leaves rounded, 5-partite, the parts 3–5-cleft. Petals thrice as long as the sepals. *magellanicum.*
  b3. Leaves basi-truncate, 5-lobed, the lobes 3-cleft. Petals as long as the sepals. *intermedium.*
  b4. Flowers umbellate. Leaves bipinnatifid. *arenicolum.*

1. G. ACAULE Willd.

Stemless perennial, with radical, 1-flowered *peduncle*, much shorter than the petioles. *Leaves* reniform, 5–7-partite, the lobes 3–5-cleft.

Patagon., Chubut, mountain meadows ; "a form with a finely appressed pulverulent velvet." (Speg.)

2. GERANIUM ANDINUM Ph.

Root fusiform, thick, perennial, rufescent, bearing at its apex numerous prostrate stems.

Patagon., Chubut, mountain meadows.

3. G. ARENICOLUM Steud.

Rhizome thick, woody. *Stems* branching from the base, leafy. *Leaves* bipinnatifid, setulously pilose, segments incised, acutely serrate. *Peduncles* solitary, exceeding the leaves, flowers 4–6 in an *umbel*. *Calyx* pilose-setose.

Punta Arenas. "Seems to be an *Erodium* from its leaves and umbels ; possibly *E. cicutarium*."

4. G. BERTERIANUM Colla.

Perennial, with long and fleshy napiform root and ascending or erect *stems*. The whole plant villous, with simple and glandular hairs. *Leaves* orbicular, 5-lobed, lobes cuneiform and 5-cleft ; the segments linear and subobtuse. *Peduncles* 2-flowered. *Sepals* oval, aristate, villous, and ciliate. *Petals* twice as long, rose-colored, entire or slightly cut. *Carpels* villous. *Seeds* smooth. Plant 30–60 cm. high.

(Chili), Patagon., by Rio Chubut, and Carren-leofú. (The Patagonian specimens have no glandular hairs.) "Are they *G. submolle* Steud., whose roots are not known?" (Speg.)

5. G. CORE-CORE Steud.

Root subligneous. *Stem* branching, covered like the leaves with appressed hairs. *Leaves* dark green, with 7-8-lobules, repeatedly trifid, obtuse and toothed occasionally, all shining or pubescent. *Peduncles* 2-flowered. *Calyx* appressed-hairy, with rather long awns. *Petals* slightly cut, exceeding the calyx. *Carpels* hairy. *Seeds* finely reticulate. Height 80 cm.

(Chili) ; Patagon., by R. Sta. Cruz, R. Chubut, and Carren-leofú.

6. GERANIUM DISSECTUM Linn. (*G. patagonicum* Hook. f.)

Erect annual, with white spreading *hairs*. *Leaves* long-petiolate, orbicular, 5–7-partite, and the parts 3–5-cleft. *Petioles* and pedicels retrorsely hispid. *Peduncles* 2-flowered. *Petals* emarginate, nearly as long as the awn-bearing calyx, purple. *Seeds* reticulate.

N. Patagon., common about Bahia Blanca, called "alfilerillo," as is *Erodium*. (J. Ball.) S. Patagon., by Puerto Deseado; Magellan. (Eurasia; Australia.)

G. DISSECTUM PATAGONICUM Hook.

Differs from the type by having a perennial root; spreading *villosity* of all parts; lobes of *leaves* less narrow and deep; carpels more glabrous.

S. Patagon., common everywhere; Chubut, Tekachoique.

7. G. INTERMEDIUM Bert.

Stem erect, branching, striate, subvillous. *Leaves* very long-petiolate, basally truncate, rather glabrous, 5-lobed, their lobes trifid, with rounded, mucronulate segments. *Petals* entire, equalling the short-awned, villous calyx. *Carpels* glabrous.

(Chili); N. Patagon., by Rio Negro.

8. G. MAGELLANICUM Hook. f.

Stem erect (?), branching upwards, hirsute with retrorse *hairs*. *Stem-leaves* hairy, long-petiolate, orbicular, 5-partite, the parts cuneate, 3–5-cleft, the segments linear-oblong, obtuse and apiculate. Peduncles long. *Flowers* large, with silky, acute, awned *sepals*. *Petals* obovate-cuneate, notched, thrice as long as the sepals. *Ovaries* silky.

Patagon., near Rawson; W. Patagon.; Magellan; Fuegia, E. and W., and at Ushuaia. (Dusén.)

9. G. MELANOPOTAMICUM Speg.

(*Columbinum*.) Perennial, subglabrous. *Rhizome* thick, with long, slender branches. *Leaves* opposite, finely and long-petiolate; semiorbicular, basitruncate, 3–5-partite; the lateral segments bifid, the median trifid, lobes oblanceolate, deeply 3-cleft at apex, above minutely appressed, subpuberulous, underneath glabrous, except the rough nerves. *Flowers*

geminate, on longish peduncles. *Sepals* elliptical-lanceolate, equalling the rose petals, long-awned and puberulous. *Fruit* smooth, pubescent. Seeds reticulate.

N. Patagon., in wet, moist shrubberies along Rio Negro. Subscandent, 25–100 cm. long.

10. GERANIUM MOOREI Phil.

Cespitose perennial, with a thick, woody root. Stems short, equalling the radical leaves, and like them rather glabrous. Leaves mostly 5-partite, the segments trifid. Peduncle 1-flowered, much exceeding the leaves. Sepals lanceolate, awned, pilose, half as long as the retuse petals. Carpels hirsute.

(Chili); S. Patagon.; in marshy places near Rio Sta. Cruz.

11. G. SESSILIFLORUM Cav.

Stemless perennial, with thick descending rhizome. Leaves radical, reniform, 5–7-partite, long-petioled, the petioles 2 cm. long, retrorsely pilose. Scapes very short, 1-flowered; they and the calyx silvery. Petals obcordate, twice as long as the sepals.

(Chili; Australia); S. Patagon., on Cordilleras (Hatcher, "pink"); Cabo Negro; Magellan. By Rio Gallegos, and Rio Scheuen, and Rio Chubut.

2. ERODIUM L'Her. Stork's-bill.

Flowers with the 2 upper petals slightly smaller than the other 3. *Stamens* 5, with 5 staminodes and 5 glands. *Beak* ending in the stigmas; the *styles* separating at maturity, bearded on the inside.

Species 60, in temperate and warm regions.

1. E. CICUTARIUM (L.) L'Her.

Tufted, branched, 15–30 cm. high. Basal and lower *leaves* petioled, pinnate, the pinnæ pinnately parted or lobed. Upper leaves similar but sessile. *Peduncles* exceeding the leaves, umbellately 2–12-flowered. *Flowers* purplish, 8 mm. broad. *Beak* long; its branches at length coiling together.

(Common in Eurasia; spreading over the United States to the Pacific coast, also over Argentina and other parts of S. Amer.); N. Patagon., S. Patagon.;

(O. A. Peterson) on pampas near Coy Inlet, in fruit Nov. 23, 1896. Magellan (Dusén). Called Alfilerillo in N. Patagon. "It is considered useful for cattle in Paraguay, Patagonia, and neighboring regions, as it springs up fresh after each fall of rain. Doubtless introduced from Europe, it has spread nearly over all South America. In Peru it extends from the coast to 3,700 meters high." (J. Ball.) A. Gray remarks on the hygrometric twisting of the "tail" of its carpels, as pushing them into the ground. Its taproot being long, strong, yet not thick, may promote its speedy reappearance on the return of rain.

ERODIUM CICUTARIUM ARENICOLUM (Steud.) Speg.

Root woody; all parts spreading, white hispid. Scarcely a variety, rather a mere form.

S. Patagon., common everywhere.

2. E. MALACHOIDES Willd.

Stem herbaceous, branching, somewhat hairy. *Leaves* cordate, undivided or 3-lobed, obtuse, dentate. *Peduncles* many-flowered. *Petals* as long as the calyx.

(Europe; Canary Is.); Patagon., near Carren-leofú.

3. WENDTIA Meyen.

Calyx with an involucre; *sepals* 5; *petals* 5. *Stamens* 10. *Flowers* pediceled, solitary or crowded, yellow. *Carpels* mostly 3. *Style* very short, with 3 stigmas. *Capsule* loculicidal, also the loculi springing upwards from the top of the axis. *Leaves* silky, lobed, or partite.

Species 3, Andine. (Fig. of *W. reynoldsii* in Eng. & Prantl, iii, 4, p. 12, D, E, F.)

W. TRIGYNA PŒPPIGIANA (Klotzsch) O. Ktze.

Erect. *Leaves* very numerous, 5-cleft. Flowers small.

N. Patagon., in rocks near Lago Nahuel-huapi.

Family 54. OXALIDACEÆ. Wood-sorrel Family.

Mostly herbs, with acid sap and palmately 3-foliolate, or digitately, or pinnately parted *leaves*, having long petioles.

Flowers perfect, regular, 5-merous; *petals* mostly showy. *Stamens* 10–15, united at base, hypogynous. *Ovary* 5-lobed, with 5 *styles*. *Seeds* with fleshy endosperm.

Species 270, mostly tropical.

OXALIS Linn.

Stamens 10. Styles distinct. *Petals* often slightly cohering at base. *Stemless* perennials, with bulbous or fleshy rhizome; or caulescent with alternate, exstipulate *leaves* and axillary *peduncles*.

Species 250, cosmopolitan, having many in South Africa, Brazil, Chili and Mexico; 1 in Norfolk I., but none reported from Australia, Tasmania, or New Zealand.

Key to the Species.

A. Leaflets 3.

b. Glabrous.

c. Rootstock thick, scaly. Leaves radical, petioles 12 mm. Leaflets round-cordate, 6 mm., fleshy. Flowers white. *magellanica.*

c2. Tubers. Leaflets obcordate, dotted black; 6–12 small, red, umbellate flowers. *rubra.*

b2. Pubescent.

c. Bulbous root; stem short, scaly. Leaflets obcordate. Flowers 2–3, pink. *gayi.*

c2. Stem low, leafy. Leaflets broad, obcordate, very hairy underneath. Peduncle with 2 leaves and lax panicle. *laxa.*

c3. Leaves rosulate: leaflets obcordate, basi-cuneate. Peduncles many-flowered. *valdiviensis.*

b3. Villose or tomentose-woolly.

c. Root not tuberous.

d. Leaflets obcordate. Flowers large, yellow, 1–2 on long peduncle. *amara.*

d2. Leaflets cordate, 2-lobed. Many 2-flowered peduncles. Creeping, with leafy branches. *nahuel-huapiensis.*

c2. Root tuberous.

d. Branching stems, rosulate-leafy. Leaflets cuneate-bifid, with linear segments. Umbel of lilac flowers. *stenophylla.*

d2. Leaves radical; leaflets round-ovate, emarginate. Scapes with many blue flowers. *floribunda.*

d3. Flowers yellow, violet and blue. "Springs up after rains." *darwinii.*

A2. Leaflets 8 or more.

b. Glabrous. Flowers solitary.

c. Stipe creeping from scaly base. Leaflets 9, obcordate, deeply partite. Flower large, convolvuliform, pink. *enneaphylla.*

c2. Thick, scaly rhizome.
c. Leaflets 11–13, linear. Flower large, convolvuliform, pink, with blue lines. *laciniata.*
c2. Leaflets 8–12, obcordate, emarginate. *loricata.*
b2. Glabrous. Fowers 2. Leaflets 12. *adenophylla.*
b3. Pubescent. Rhizome fleshy, scaly. Stemless. Leaflets 12, linear. Flowers solitary. *squamosa-radiosa.*
b4. Tomentose. Creeping, scaly rhizome. Stemless. Leaves 10–14 divided, long-petioled. Flower solitary, rose to white-blue. *patagonica.*

1. Oxalis adenophylla Gill. (*O. bustillosii* Phil.)

Glabrous. Caudex almost none, very leafy at the apex. Petioles long, slender. Leaflets about 12, sessile, glabrous, obcordate, the lobes divergent, fleshy, attenuate at base, often violaceous. Peduncles nearly as long as the petioles, 2-flowered. Pedicels incurved in fruit. Sepals unequally broad, one sixth the length of the violet corolla, at length enlarged. Handsome.

(Chili); Patagon., along Rio Chubut; Carren-leofú; Teka-choique. "Has at first an ovate bulb, afterwards changing to a rhizome." (Speg.)

2. O. amara St. Hil.

Without tuberous rhizome. Stem suffruticose, prostrate. Leaves trifoliate; leaflets sessile, obcordate, villous, hispidly ciliate. Peduncles axillary, 1–2-flowered, longer than the leaves. Flowers large, yellow. Stamens all exceeding the styles. Cell of ovary 1-seeded.

Stigmas small, capitate.

(S. Brazil; Argentina); N. Patagon.

3. O. darwinii Ball (nomen).

Springs up after rains, and is variable in the color of the flowers.

Forms with yellow, others with violet and with blue flowers. Its tuberous root is eaten. "Vinagrillo" (Span.), "Tschilki" (Araucanian).

Common at Bahia Blanca and N. Patagon. (J. Ball.)

4. Oxalis enneaphylla Cav. (*O. pumila* d'Urv.)

Rhizome tomentose at top. *Stipe* creeping, with interruptedly scaly base. *Leaves* long-petioled, with 9 glabrous or pubescent, obcordate-

cuneate, deeply partite leaflets. Peduncles as long as the leaves, 2-bracteolate, bearing 1 rather large flower, of convolvulaceous form, pink with lutescent lines. Sepals silky or villous. *Stamens* 10, alternately long and short. *Styles* hirsute, capitate.

Falklands; S. Patagon., Cordilleras (J. B. Hatcher); N. and E. Fuegia (Dusén).

"Rootstock fleshy, edible. The pride of the Falklands, covering banks by the sea with a mantle of snowy white during the spring month of November. The plant is an excellent anti-scorbutic and an agreeable potherb, though too acid except in tarts and puddings." (J. D. Hooker.) Hatcher's "mountain form" has the petioles 10 cm. long, and lilac flowers.

5. O. FLORIBUNDA Lehm.

Tomentose. *Roots* tuberous. *Leaves* radical; *leaflets* 3, round-obovate, emarginate. *Scape* many-flowered. *Sepals* hoary; *petals* blue. *Stamens* exceeding the styles.

(Brazil); N. Patagon. Called by the Spaniards and Araucanians by the same trivial names as *O. darwinii;* and its roots similarly eaten.

6. O. GAYI (Gay) Macl. (*O. articulata* Gay, non Savign.)

Pubescent. *Bulbous*, with fibrous roots. *Stem* scaly, very short. Petioles puberulous, very short. *Leaflets* 3, sessile, obcordate, deeply emarginate, hairy on both surfaces. *Peduncles* radical erect, 16–25 cm. long, 2–3-flowered. *Flowers* pink, on slender pedicels. *Calyx* not half as long as the petals. *Ovary* glabrous. *Seeds* numerous.

(Chili); N. Patagon., by Rio Negro.

(*O. articulata* Sav. has the *root* nodose-articulate, the flowers yellow, 5–6 on an umbelliferous scape; and is found at Montevideo. The Patagonian plant here called *O. gayi*, was described by Gay, who supposed it to be the *O. articulata* of Savigny.)

7. O. LACINIATA Cav.

Rootstock with continuous scales, white, fleshy. *Petioles* 5–6 cm. long; *leaflets* 11–13, linear, acute, glabrous. *Scapes* shorter than the petioles, 1-flowered. *Corolla* of form of *convolvulus*, 2 cm. long and broad, thin, pink with bluish stripes. (Fig. 76.)

S. Patagon., by Hatcher at Cape Fairweather, and at Coy Inlet, Oct.–Nov., 1890, by Dusén at Sta. Cruz. It and *O. enneaphylla* form one section by reason of their edible root-stock. Some of the flowers are long-styled, with short and medium stamens; and others are short-styled and long-staminate. (G. M.)

FIG. 76.

Oxalis laciniata. — Petals (in center); sepals and essential organs of long-styled flower (on left): of short-styled flower (on right).

The leaves of B. Brown's specimens have petioles 8–10 cm. long.

8. OXALIS LAXA Hook. & Arn. (*O. alsinodes* Walp., *O. micrantha* Bert.)

Stem low, simple, leafy. *Leaflets* 3, broad-obcordate, slightly hairy-ciliate on upper, and densely so on the lower surface; petioles hairy. *Peduncles* twice as long as the leaves, hairy, bearing a lax, apical *panicle*. *Sepals* hairy, narrow-lanceolate.

(S. Chili); Chubut, in hilly parts.

9. O. LORICATA Dusén.[1]

Rhizome thick, totally covered by persisting, suborbicular, imbricating scales, the uppermost being intermixed with small, membranaceous ones.

[1] O. LORICATA Dusén n. s.

Rhizoma durum, robustum, usque ad 12 mm. crassum, superne pauciramosum, tota longitudine squamatum; *squamæ* diutissime imbricatæ, fusco-brunneæ, fere orbiculares, usque ad 4.5 mm. longæ et 4 mm. latæ, valde concavæ, carnosæ, glaberrimæ, juniores saltem apicem versus subcarinatæ, omnes minute apiculatæ, supremæ squamis membranaceis, lanceolatis, glaberrimis, integerrimis, squamis carnosis sublongioribus vel plerumque subbrevioribus, late uninervosis intermixtis; *folia* radicalia, usque ad 12 apice rhizomatis fasciculatim egredientia, petiolis gracilibus, glaberrimis, usque ad 7 cm. longis, apice rosulatim foliosis; *foliola* 8–12, conduplicata, emarginata, planefacta, obcordata, usque ad 11 mm. longa et 7 mm. lata, utroque latere siccitate minutissime scrobiculata; *pedicelli* petiolis æquilongi, glaberrimi, uniflori, circiter 15 mm. infra florem bracteis binis, breviter ovatis, subacutis, margine pilosis præditi; sepala lanceolata vel late lanceolata, glaberrima; cætera ignota.

Hab. Patagonia australis, Cerro Toro, supra terminum silvæ (19/3, 1897); et secus Rio Chubut.

Leaves about a dozen, arising fasciculately from the top of the rhizome; leaflets 8–12, conduplicate, emarginate, obcordate, all glabrous, but finely scrobiculate when dry. Pedicels as long as the slender petioles, 7 cm., glabrous, 1-flowered with a pair of ovate, hairy-margined bracts near the top. Sepals lanceolate or a little broader, glabrous. Cetera?

S. Patagonia, at Cerro Toro.

10. Oxalis magellanica Forst.

Stemless, with thick, scaly *rootstock*, 5 cm. long, and radical trifoliolate, stipulate *leaves*, petioles 12 mm. long. *Leaflets* round-cordate, 6 mm. long, fleshy, paler beneath. *Scape* strong, as long as the petioles, 2-bracteolate beneath the flowers. *Sepals* broad-oblong, retuse, one third shorter than the white *petals*.

Small; allied to *O. acetosella*.

Magellan; Fuegia; Cape Tres Montes, at 600 meters elevation. Also in New Zealand.

11. O. nahuel-huapiensis Speg.

Stem creeping, thick, fleshy, woolly. *Cortex* thick, with lax scales; these linear-triangular, produced into fine, leafless petioles. New *branchlets* from the axils of the scales are fasciculately leafy, with long, slender petioles, and *leaflets* 3, deeply cordate, bilobed; their lobes broad, obtuse, thick, glabrous. Numerous 2-flowered *peduncles*. *Flowers* rather small, glabrous.

N. Patagon., shady rocks by Lago Nahuel-huapi.

12. O. patagonica Speg.

Stemless. *Rhizome* creeping, densely clothed below with thick golden scales, above with acute, linear, fuscescent bracts. *Leaves* radical, long-petioled, apically 10–14 divided; the *leaflets* parted to their base, plicate, obovate, subfalcate, densely and appressedly tomentose. *Scapes* scarcely equalling the petioles, with a solitary, large, rose to whitish-blue *flower*.

S. Patagon., in sandy hills near Rio Sta. Cruz (Speg. & O. A. Peterson); by Rio Gallegos and in Sierra de los Baguales. "Is it *O. squamoso-radicosa* Steud., with non-woody root scales or a more villous form of *O. enneaphylla* Cav.?" (Speg.)

13. Oxalis rubra St. Hil.

Root tuberous, obovate. Leaves radical, trifoliolate. Leaflets obcordate, smooth, full of black dots. Scape smooth, bearing a simple, 6–12-flowered umbel, with a short involucre. Flowers small, red; petals entire. Styles exceeding the stamens. Carpels 4–5-seeded.

(Brazil); N. Patagon., by Rio Negro.

14. O. squamoso-radicosa Steud.

Rhizome soft-fleshy, covered by sublignescent scales. Stemless. Leaves radical, on slender petioles, unifoliate (multifoliate?) spreading at the apex. Leaflets less than 12, equal, linear, pubescent. Flower solitary, with a small, ovate bract. Calyx-segments lanceolate, many times shorter than the petals.

Magellan, in meadows.

15. O. stenophylla Speg.

Root tuberous, obovate, its apex many-headed; the branches apically obovate-scaly, rosulate-leafy. Leaves long-petioled, trifoliolate. Leaflets cuneate, deeply bifid; their segments linear-obtuse. Peduncles slender, often exceeding the leaves, trichotomously umbellate. Flowers mid-sized, pale lilac.

N. Patagon., common by Rio Negro.

16. O. valdiviensis Barn.

Stem low, leafy. Petioles 8–14 cm., more or less hairy. Leaflets 3, wide, obcordate, basicuneate. Scapes 8–25 cm., with many flowers on 5 mm. petioles. Sepals naked, obtuse; petals 4 times as long. Style hairy. Capsule-loculi 3–4-seeded.

(Chillan); Chubut, near Cholila.

O. valdiviensis humilis Speg.

Only 5–10 cm. high; leaves thickish, glabrous. Scapes scarcely exceeding the leaves.

Chubut, in dry places near Cholila.

Family 55. TROPÆOLACEÆ. Nasturtion Family.

Herbs, often climbing, with peltate or partite *leaves* and axillary, showy, irregular *flowers*. *Sepals* 5, the posterior spurred. *Petals* 5, the upper 2 unlike the others. Stamens 8, hypogynous. *Carpels* 3, syncarpous, each *1-seeded*.

Species 35, in mountain regions from Mexico southwards.

TROPÆOLUM Linn. Nasturtion.

Flowers irregular; posterior *sepal* spurred. *Petals* lightly perigynous, the posterior pair unlike the others.

1. T. PATAGONICUM Speg.

Minute, glabrous, with peltate-partite *leaves*, on very short petioles. *Leaf-segments* 4, small, elliptic-orbicular, slightly unequal, thick, glaucous. *Flowers* somewhat orange; mediocre, axillary, solitary, with long peduncle and short spurs.

Patagon., Chubut, on dry hills, by Lago Colu-huapi, and along Rio Chubut. "Roots white, with fusoid or cylindraceous tubers, edible and called *Chalias*." (Speg.)

2. T. PENTAPHYLLUM Lam.

Tuberiferous. Leaves 5-parted. Flowers solitary in the axils. *Calyx* subvalvate; the 3 anterior petals all, or 1 or 2 wanting. *Fruit* berry-like, of 3 fleshy blackish-violet 1-seeded divisions; edible.

(Chili; Brazil); Patagon. (see *Magallana*).

3. T. POLYPHYLLUM Cav.

Tubers none. *Leaves* peltatisect, long-petioled, the segments 5–10, oblong or obovate, subdentate, basicuneate. *Petals* 5, unguiculate, rather exceeding the calyx, obtuse, entire, yellow. Annual.

(Andine region.)

T. POLYPHYLLUM INCISUM Speg.

Lobes of the very glaucous *leaves* broad-obovate, mostly complicate, more or less pinnately incised. *Root* thick, branching, 50–150 cm. deep, with scattered fusoid to cylindraceous *tubers*, rather insipid.

Chubut, near Teka-choique and Nafofo-cahuello.

TROPÆOLUM POLYPHYLLUM MYRIOPHYLLUM P. & E.

Stem slender; lobes of leaves lanceolate or linear, often again lobed. (Chili); Patagon., Chubut.

MAGALLANA Cav. (sub *Tropæolum* auct.)

Calyx-lobes, the 2 anterior deeply parted; 3 posterior connate but 3-toothed. *Stamens* united at very base. *Fruit* 3-winged, abortively 1-seeded.

M. PORRIFOLIA Cav.

Annual, climbing on hedges. *Leaves* 3-partite; their lobes linear, entire. "*Root* with globose or ellipsoid tubers, white inside." (Speg.)

S. Amer., to Puerto Deseado in S. Patagon., "not rare in gravels along Rio Sta. Cruz, in 1882 (C. Speg.) and San Julian, in 1882 (Torini del Furia)." Valley of Rio de Mayo. (Bentham and Hooker regard it as a depauperate form of *Tropæolum pentaphyllum* Lam., described with an alien fruit.)

Family 56. ZYGOPHYLLACEÆ.

Usually shrubs, with opposite, stipulate, pinnate or 2–3-foliolate *leaves*, the leaflets entire; and with perfect, 5-merous *flowers* on axillary peduncles, sometimes apetalous. *Stamens* 1–3 times as many as the sepals, hypogynous. *Ovary* 4–12-celled; *style* simple. *Fruit* mostly capsular, dividing into segments. *Seeds* with or without endosperm.

Species 150 in warm climates.

KEY TO THE GENERA.

A. Filaments with lacerous basal scales. Ovary short-stiped, becoming a 5-winged fruit. Broom-like shrubs. Leaves odd-pinnate. 1. *Bulnesia.*

A2. Filaments with a 2–3-cleft basal scale. Ovary sessile. Fruit 5-coccous, villous. Leaves twice-pinnate. Branches nodose, distichous. 2. *Larrea.*

1. BULNESIA Gay.

Broom-like shrub, with sparse, small, evenly pinnate *leaves*, the leaflets oblong-mucronate. *Stipules* broad, ovate. *Sepals* unequal. *Petals* as long, clawed. *Stamens* 10, the filaments with adnate, basal scales. *Ovules* numerous; mericarps winged, 1-seeded, dehiscing.

Species 6, Chili and Argentina.
(Fig. in Eng. & Prantl, iii, 4, p. 84.)

Bulnesia retama Griseb.

Silky. Peduncles 1-flowered. *Leaflets* 2–3 pairs, deciduous; the internodes long.
(Andes; on dunes and in the campos of Catamarca); N. Patagon.

2. LARREA Cav.

Balsamifluous evergreen, odorous shrubs, with distichous, alternate, nodose *branches*, and opposite, even-pinnate *leaves* (often a leaf, simple, 2-toothed) with persistent *stipules*. *Peduncles* interstipular, 1-flowered. *Petals* yellow, larger than sepals. *Stamens* 10, the filaments with a bifid, basal scale. *Ovary* hairy, globose, 5-celled. *Fruit* villous, 5-coccous.
Species 4, Texas to S. Amer.

1. L. ameghinoi Speg.

Prostrate, diffuse shrub. *Leaves* pubescent, distichous, opposite, sessile, subelliptical, inequilateral, odd-pinnately lobed; the lobes only 1–2 on each side, obtusish. *Flowers* short-pediceled, subsolitary at apex of branches; *sepals* subobovate, green with yellow border; *petals* oblanceolate, orange. *Carpels* entire.
Patagon., by Golfo de San Jorge; Rio Chubut.

2. L. divaricata Cav.

Leaves sessile, 2-lobed, villous, the lobes deep, lanceolate, divaricate. *Branches* somewhat 4-angled; leaf-scars conspicuous, *sepals* unequal, yellowish. *Ovary* and fruit covered by long hairs. Perennial.
(Argentina, called Jarrilla); Patagon., Chubut, in dry gravelly valleys.

3. L. cuneifolia Cav.

Leaves villous, simple, subsessile, cuneate, apically 2-lobed, the lobes divaricate-acute, pinnately nerved, with a median seta.
(Fig. in Eng. & Prantl, iii, 4, p. 86.) Argentina to N. Patagon., at confluence of RR. Limay and Neuquen.

4. Larrea nitida Cav.

Shrub, 2 meters high, with distichous branches. Glutinous. *Leaves* glabrous, unequally pinnate. Leaflets 5–8 pairs, approximate, linear-oblong, obtuse. *Peduncles* shorter than the leaves. *Carpels* silky.

Argentina and Chili, to N. Patagon. Leaves much used as fodder for horses and mules near Aconcagua. "Poisonous to mules yet medicinal," Reiche; called Jarrilla. By Rio Chubut.

Family 57. Polygalaceæ. Milkwort Family.

Herbs (or sometimes in the tropics woody), with alternate or opposite, or whorled, *stipulate leaves*, and zygomorphic *flowers*. The two lateral *sepals* forming large, petaloid "wings." *Petals* 3, united into a tube, which is split dorsally, and adnate to the 8 or 6 *stamens;* these mon- or diadelphous. *Ovary* 2-celled. *Seeds* 1 in each cell, generally caruncled, with or without endosperm.

Species 750, in temperate and tropical regions; several in N., many in S. and W. United States, and Mexico and the Andes.

Key to the Genera.

(All these are 8-staminate.)

A. Two large lateral petaloid sepals. The dorsal pair of petals small or none. Fruit a loculicidal capsule.

b. Capsule not cuneate. Lateral petals with the longer (ventral) carina coalescing sympetalously, the tube being open dorsad. Seeds arillate, or with long hairs. 1. *Polygala*, p. 546.

*b*2. Capsule long-cuneate. Lateral petals free from the carina. Seeds non-arillate, with long thick hairs. 2. *Bredemeyera*, p. 550.

*A*2. Lateral petals wanting (or fused with the carina). Dorsal pair adnate to the staminal tube. Carina free. Fruit indehiscent, a drupe or a samara. 3. *Monnina*, p. 551.

1. POLYGALA Linn.

Herbs, except in tropical climates. Flowers often in spikes, with 2-bracted pedicels. Petals more or less united, the lower one often crested. Stamens about 8, in one or two sets. Cells of fruit 1-seeded.

Species 260, widely distributed. Brazil is headquarters. Few in Australia; none reported from N. Zealand, Falklands, or Fernandez.

KEY TO THE SPECIES.

A. Leaves very narrow.
  b. Leaves and branches, filiform, rush-like. Floral wings white; petals blue. Seeds villous. *stenophylla*.
  *b*2. Leaves linear-filiform, remote, erect. Racemes spiciform. *patagonica*.
  *b*3. Leaves narrow-linear, remote dotted. Seeds retrorsely pilose. *variabilis*.
*A*2. Leaves linear. Racemes terminal, many-flowered.
  b. Leaves acute, margin revolute. Outer sepals whitish. Capsule broad-elliptical. *desiderata*.
  *b*2. Leaves subobtuse, crispy. Wings obovate, 7-nerved. Capsule attenuate upwards. *gnidioides*.
*A*3. Leaves oblanceolate or obovate, epiphyll hoary. Heads terminal, few-flowered. External sepals whitish. *œdipus*.
*A*4. Leaves elliptical-obovate. Racemes terminal, few-flowered.
  b. Flowers only 5 mm. long. Leaves rather broad. *darwiniana*.
  *b*2. Flowers larger and leaves narrower. *tehuelchum*.
*A*5. Leaves elliptical, obtuse, thickish, small. Flowers few, subspicate, terminal on the branchlets. *moyanoi*.
*A*6. Leaves oblong-linear, crowded. Capsule slightly 2-horned. *thesioides*.
*A*7. Leaves small and acutish on lax branches, or larger and spatulate on spiny branches. Villous plants. *spinescens*.
*A*8. Leaves cuneate-attenuate, fleshy. Plants prostrate, glabrous. *salasiana*.
*A*9. Leaves broadly obovate or obtriangular. Racemes few-flowered. Capsule narrowly winged. *oreophila*.

1. POLYGALA DARWINIANA Benn.

Stem woody below, much branching, 5–15 cm. high. *Leaves* narrow-elliptical-obovate, margin slightly glandular. *Racemes* terminal, few-flowered. Pedicels glabrous, bracts ovate, 1 mm. long. *Flowers* as large as the leaves. Outer *sepals* small, upper one larger. *Wings* obovate-cuneate, large.

Near to *P. tehuelchum* (Speg.), but with broader leaves, and much smaller flowers, which are scarcely 5 mm. long. Keel with a beautiful fimbriate crest. Style short, stigma crested like a duck's bill.

S. Patagon., Puerto Deseado. (C. Darwin.)

2. P. DESIDERATA Speg.

(*Orthopolygala*, *pterocarpa*, *aspalatoidea*.) Perennial, crisp-pubescent; root vertical, stout, cespitose-branching at top. *Branchlets* fastigiate, crowded, hoary upwards. *Leaves* thickish, crowded, spreading, broad-linear, doubly attenuate, acute, marginally revolute, tomentose in youth. *Racemes* acrogenous, sessile, ovate, many-flowered, with small, white, cadu-

cous bracts. *Flowers* mediocre, outer sepals whitish, wings rhomboid-elliptical, 5-nerved, thrice as long as the upper sepal. Superior *petals*, linear, adnate to the staminal tube, with a multifid, cuneate *crest*. *Anthers* pediceled. *Ovary* bilocular, glabrous, style twice as long, z-form; *stigma* cochleate, crestless. *Capsule* broad-elliptical, with persistent wings, 2-seeded. *Seeds* black, glabrous, except on the ventral suture, with no caruncle, but a ring-like umbonule.

Patagon., in rocky plain between San Julian and Rio Deseado.

3. Polygala gnidioides Willd. "Quelen-quelen."

Root thick, tortuose. *Stems* woody at base, erect, branching, subvillous upwards. *Leaves* numerous, sessile, linear, subobtuse, crispy. Racemes terminal, many-flowered, showy. The 3 smaller *sepals* lanceolate, the 2 larger obovate, obtuse, 7-nerved. *Capsule* apically attenuate, basally rounded. Height 10–20 cm.

(Chili); Chubut, at Teka-choique, and Bolson. Allied to *P. moyanoi*, but more leafy, flowers brighter and larger.

4. P. moyanoi Speg. (*Acanthocladus moyanoi* Speg., *Polygala mayausi* Speg.)

Fruticose, unarmed, intricately- and long-branched, puberulent in youth, at length glabrate. *Leaves* elliptical, obtuse, thickish, sessile or subsessile, small. *Flowers* few, subspicate on the ends of the branchlets. Upper *petals* free, scarcely subadnate at the base, with fimbriate carina. *Capsule* small, orbicular, glabrous, not or scarcely emarginate.

Patagon., in dry meadows by Rio Chubut; near Cabo Raso.

5. P. œdipus Speg.

(*Orthopolygala, pterocarpa, aspalatoidea.*) Perennial, with vertical straight root, and vermicular-flexuose apex, subterraneously branching with dense fascicles; the branches terete, the underground part with white, spongiose cortex, and leafless; the exposed part densely leafy, glabrescent to subpuberulous. *Leaves* alternate, oblanceolate or obovate, anteriorly round-cuneate to acute, posteriorly long-attenuate, hoary, with straight hairs on the upper surface, glabrous below. *Flowers* few, subcapitulate on ends of the branches, short-pediceled, mediocre. External *sepals* about

equal, white, green-carinate, the superior slightly larger, with 3-nerved wings thrice as long. Superior *petals* linear, subsigmoid, obtuse, basally adnate to the staminal tube; *crest* of the carina multifid anteriorly, entire posteriorly. Anthers pediceled. Ovary bilocular, glabrous; style twice as long, sigmoid; stigma cochleate, crestless. Capsule seedless.

Patagon., among basalt cliffs between San Julian and Rio Deseado.

6. Polygala oreophila Speg.

(*Orthopolygala, pterocarpa, aspalatoidea.*) Glabrous perennial, with a deep woody *rhizome*, sending down many filiform, naked, subterranean branches; and others upward, resulately leafy. *Leaves* alternate, somewhat fleshy, broad-obovate or obtriangular, upwards obtusely rounded or truncate-sinuate, downwards long-cuneate. *Racemes* acrogenous, or pleurogenous, sessile, shorter than the leaves, few-flowered. Bracteoles small, subpersistent, white. Flowers mediocre. Outer sepals nearly equilong, the upper suborbicular, thrice shorter than the elliptic, 5-nerved, obtuse wings; superior petals cultriform at their base, slightly adhering to the staminal tube. *Crest* subtriangular, few-cleft; anthers pedicellate; ovary bilocular produced to a style longer than the glabrous crestless stigma. Capsule subelliptical, inequilateral; its margin narrowly winged, shorter than the persisting wings. *Seeds* ovate-subcylindraceous, black, puberulous, not caruncled, the membranes of the strophiole being obtuse and half their length.

Patagon., in mountains by Rio Alumine, Neuquen.

7. P. patagonica Phil.

Branches virgate, simple, or only an apical branch. *Leaves* remote, erect, linear-filiform. *Racemes* spike-like. The lower *petal* keeled. *Ovary* oblong, not emarginate, nor ciliate, plant 16 cm. high.

S. Patagon., by Rio Sta. Cruz; Golfo de San Jorge.

8. P. salasiana Gay.

Glabrous. Stems very prostrate. *Leaves* obtusely cuneate, basally attenuate, fleshy. *Branches* few-flowered. Keel of corolla crested. *Capsule* elliptical, scarcely emarginate at top.

(Chili, Andes); S. Patagon., Rio Chico; Valley of the Rio Gallegos, on dry rocky places. (Nordenskj.; near Lago Lacar.)

9. POLYGALA SPINESCENS Hook.

Villous. Stem 10–60 cm. high. *Branches* relaxed with small acutish *leaves*; or rigid, spinescent, cespitose, with larger, spatulate, obtuse leaves. *Capsule* often abortively 1–celled and arcuate-falcate.

N. Patagon.

10. P. STENOPHYLLA A. Gray.

Glabrous, rush-like, 30–60 cm. high, with paniculate, filiform branches. *Leaves* alternate, filiform, the cauline deciduous. *Raceme* terminal; its bracts ovate-scarious. *Wings* ovate-acute, white, as long as the bluish petals. *Seeds* oblong villous.

N. Patagon., by Bahia Blanca by Rio Chubut.

11. P. TEHUELCHUM (Speg. sub *Acanthocladus*).

Small, branching, woody perennial, glabrous, rigid, but not spinose. *Leaves* alternate, elliptic-obovate. *Flowers* few, small, terminal. *Keel* densely crested-laciniate. *Capsule* glabrous, not emarginate.

S. Patagon., by Rio Chico; at Rio Coy, by Hatcher. A specimen in the Gray Herbarium is from the Galapagos Islands, and has a note in Gray's handwriting "sed foliis latioribus"; which note would also apply to the Hatcher specimens. "Differs from *P. Darwiniana* by having broader leaves and much smaller flowers, scarcely 5 mm. long." (Speg.) By Rio Deseado.

12. P. THESIOIDES Willd.

Undershrub. *Stems* numerous, erect. *Leaves* crowded, oblong-linear, *Racemes* 8–12-flowered. *Capsule* slightly 2-horned at the summit.

(Chilian Andes); Patagon. (?).

13. P. VARIABILIS H. B. & K.

Stem ascending, subfastigiately branching upwards. *Leaves* sparse, remote, narrowly linear, glabrous, with pellucid dots. *Spikes* lax. *Flowers* crested. *Seeds* conical, retrorsely pilose.

(By Rio Orinoco); Patagon.

2. BREDEMEYERA Willd. (including *Hualania* Phil., and *Comesperma* Labill.)

Perennial herbs, or undershrubs, sometimes climbing, with alternate, *exstipulate* leaves, and flowers in simple or branching *racemes*. The 2

inner *sepals* large, wing-like; the lateral *petals* wanting or scalelike; the 2 upper petals and the lowest one partly united to the staminal tube. *Capsule* long-cuneate. *Seeds* hairy.

Species 50; section *Eubredemeyera* (15 sp.) and *Hualania* (4) in S. Amer. The others (*Comesperma*) in Australia.

BREDEMEYERA MICROPHYLLA Hier.

(Only the fruit.) *Capsule* obovate-oblong; slightly emarginate, crowned by the persistent style, attenuate at the base; laterally compressed, 2-celled; the cells 1-seeded. *Seeds* 11 mm. long, suspended, appressed silky; with endosperm. *Embryo* thick, fleshy, green.

N. Patagon., by Rio Colorado & Rio Negro.

3. MONNINA Ruiz. & Pav.

Annuals or perennials, with spike-like racemes. *Sepals* free, or the anterior pair partly united; the wings small. Anterior *petal* sessile, free from the staminal tube; lateral *petals* short, adnate to the tube. *Carpels* 2, one of them mostly rudimentary. *Fruit* a key or a drupe. *Seeds* smooth.

Species 60, in Mexico and along the Andes.

1. M. ANGUSTIFOLIA DC.

Woody perennial. *Lowest* leaves soon vanishing. *Branches* and branchlets pubescent.

Patagon.

2. M. DICTYOCARPA Griseb.

Undershrub branching at base; 30 cm. high; the *branches* leafless above, ending in a short-flowered raceme. *Leaves* shortly lance-linear, mucronulate. *Wings* rounded. *Keel* 3-lobed. *Stamens* 8. *Fruit* 1-celled, glabrous, orbicular, winged, reticulate, the veins prominent towards the margin and forked.

(Chilian Andes; Argentina); N. Patagon.

Family 58. EUPHORBIACEÆ. Spurge Family.

Monœcious or diœcious plants with acrid, often milky, sap, and of varying habit. *Flowers* apetalous or petaliferous, sometimes much re-

duced, and often subtended by an involucre which resembles a calyx. *Ovary* usually 3-celled, with 1–2 pendulous ovules in each cell. *Styles* 3-cleft. *Fruit* tricoccous, the parts often breaking away elastically from the axis. *Endosperm* oily or fleshy; and cotyledons broad.

Species 400, abounding most in warm climates.

KEY TO THE GENERA.

1. Flowers distinct. Stamens 2–3, on short filaments. Styles 3, united at base. Cotyledons broader than the radicle. Calyx small, opening before anthesis; or none. 1. *Colliguaya*, p. 552.
2. Flowers grouped, one central female and several 1-staminate males, enclosed in a calyciform involucre, the whole resembling a hermaphrodite flower. The tricoccus fruit protruding, and glands alternating with the lobes of the involucre. 2. *Euphorbia*, p. 553.
3. Flowers solitary in the axils, or terminal and crowded. Stamens 6. Embryo linear, the cotyledons scarcely as wide as the radicle. Styles distinct. Heath-like. 3. *Dysopsis*, p. 554.
4. Axillary spikes, apically male, of 5-merous flowers. Ovary tridymous; styles bifid. 4. *Aonikena*, p. 555.

1. COLLIGUAYA Molin.

Shrubs, with terminal spikes of monœcious (or diœcious) *flowers*, the partial inflorescence being glomerulate or rarely lax, and without calycoid involucre. *Petals* none. *Male flowers* with no calyx or rudimentary calyx, and 2–3 *stamens*. *Female flowers* with 2–3 *sepals*. *Fruit* having 2–3 bivalved cocci, or a 3-winged carpophore.

Species 6, in extratrop. S. Amer. (Fig. in Eng. & Prantl, iii, 5, p. 100, C–F.)

1. C. INTEGERRIMA Gill & Hook.

Leaves coriaceous, entire. *Male bracts* broad, ovate, horizontal, containing 9–14 *stamens*. *Female* bracts ovate-lanceolate, enclosing the sessile, oblong-ovate, acuminate *sepals*. *Ovary* 2-celled; *capsule* didymous, compressed.

(Chilian Andes); Patagon., Chubut, Rio Sta. Cruz, Golfo de San Jorge.

2. C. PATAGONICA Speg.

Fruticose, glabrous, branches nearly leafless, flexuose and subcircinate at top. The few *leaves* caducous, linear, entire, obtuse, cuneate; others at the base with a large, tooth-like gland. *Spikes* axillary, short, bracts coarsely 2-glandular. *Capsule* didymous, 2-celled, mediocre. *Seeds* subglobose, fusco-maculate, with small, white caruncle. — Diœcious (Speg.)

Patagon., Chubut, by Lago Musters; by Rio Sta. Cruz and Rio Chico.

2. EUPHORBIA Linn.

Herbs or shrubs, with acrid, *milky juice*, and monœcious, pedicled *flowers*, in sets of several males and a single, exserted female, enclosed together in a calyciform involucre. *Perianth* none, or 3 rudiments on the female flower; *stamens* each on a jointed filament-pedicel, and each representing a flower. *Ovary* sessile on top of its pedicel, 3-celled, the cells 1-seeded; becoming a tricoccous *fruit*.

Species 600, chiefly subtropical, and often xerophil. Some are found in Lapland and Iceland; whence they extend to S. Amer., Australia, and the Fijis, and New Zealand.

1. E. PATAGONICA Hieron.

Glabrous, glaucous, having many stems from a short root. *Leaves* fleshy, subentire; the lower cauline sparse, sessile, semiamplexicaul, oblong, entire, 25 mm. by 7–8 mm. Upper floral *leaves* ovate, basi-cordate. *Inflorescence* frequently dichotomous from 3 approximate radii. *Involucre* long-peduncled (8–10 mm. long) dentate, subtruncate, with 4–5 glands. *Capsule* deeply 3-sulcate, scarcely calyculate. *Styles* briefly united at their base, thick and 2-lobed above.

N. Patagon.; common in dunes near Carmen de Patagones.

2. E. PORTULACOIDES (Linn.) Spreng.

Glabrous (or minutely velvety), with many stems from a long root, rays of the umbel 3, often long and leafy, and repeatedly dichotomous; the *leaves* glaucous, fleshy, sessile from an attenuate base, obovate, obsoletely crenulate, the floral leaves similar. *Inflorescences* in the dichotomies; *involucral lobes* long with purple glands. *Seeds* ovate, subtetragonal, smooth.

(Chili); Patagon., at Coy Inlet, by Hatcher, Nov. 5, 1896; "in bunches on the pampas." Chubut; in dry, sandy places. Allied to *E. ipecacuanha* L.

E. PORTULACOIDES CHILENSIS Gay.

Stems often erect. *Leaves* oblong-lanceolate or lanceolate, acute.

(Chilian Andes; Argentina); N. Patagon., by Rio Negro.

EUPHORBIA PORTULACOIDES GLABRA Phil.

"In terris magellanicis."

Spegazzini gives 3 forms: (*a*) *obtusifolia*, glabrous; leaves obtuse. (*b*) *acutifolia*, glabrous; leaves acute. (*c*) *bridgesi*, hispidulose; leaves obtuse.

3. E. PSEUDOPEPLUS Speg.

(*Tithymalus, galarrhœa, leiocarpa, subleiosperma.*)

Annual, the stem at the very base having 2 opposite, equi-long branches, above this densely and alternately branching; the *branches* and branchlets subappressed; *cauline leaves* alternate, spatulate, subpetiolate, small, caducous; *floral leaves* larger, opposite, suborbicular, sessile. *Umbels* 2–5-rayed; the rays 2–3-dichotomous. *Flowers* small, nearly sessile; lobes of the turbinate, membranaceous *involucre* minute, entire; *glands* ochroleucous, entire; *cocci* of the capsule dorsally rounded; *seed* elliptical, rugose-reticulate. *Caruncle* peltate, not depressed.

In higher places along the Rio Negro, and Golfo de San Jorge.

4. E. SERPENS Kth.

Glabrous annual. *Stems* filiform, prostrate, branching. *Leaves* short-petioled, from an unequally cordate base, ovate-orbiculate, entire, often retuse. *Stipules* broad-triangular, toothed at apex *Involucres* solitary in the upper axils, but approximate, as the internodes are short, 2–3-lobed, with transverse oblong glands. *Styles* shortly bifid. *Cocci* keeled.

(N. Amer., by Mexico to S. Am.); N. Patagon. It seems identical with the Oriental *E. serpens indica* Engelm. (DC. Prodr., xv, 2, p. 30).

(Fig. in Brit. & Br, ii, p. 372.)

3. DYSOPSIS Baill.

Small, prostrate herb, with alternate, petiolate *leaves*, and small, axillary, monœcious *flowers* (or terminally crowded). *Calyx* 3-cleft. *Petals* none. *Stamens* 6, epicalycine, exsert, with versatile anthers. *Ovary* 3-celled; *styles* distinct, lanceolate, laciniate. *Capsule* tridymous, having small *seeds* with narrow cotyledons.

Only species:

D. GLECHOMOIDES (Rich.) Müll.

(*D. gayana* Baill.)

Leaves broad-ovate to orbicular, basi-truncate to cordate, crenate, or lobed. *Flowers* subsessile or long pediceled.

(Andes, Fernandez); Magellan, by mountains and woods; Fuegia.

DYSOPSIS GLECHOMOIDES HIRSUTA.

In Fernandez, and at Punta Arenas.

4. AONIKENA Speg. (*Nova Addenda ad Fl. Patagon.*, p. 162, 1902.)

Euphorbiacea, crotonea, chrozophorea, eleutheropetala.

Male flowers: calyx in the bud ovoid, acute, closed, in anthesis valvately 5-partite; *petals* 5, shorter than the calyx, denticulate; *disc* inconspicuous; *stamens* 5, filaments united at base into a column, alternating with the petals; anthers ovate, always erect, dorsifixed, the locules parallel, laterally dehiscing; no rudiment of an ovary. *Female flowers: calyx* as in males, the sepals scarcely larger; petals and disc-glands none; *ovary* 3-locular; *styles* spreading, free from the base, slightly bifid below the middle; the branches slender apically, obtuse, entire; *ovule* in the locules solitary. *Capsule* when dry tridymous, separating into 2-valved cocci. *Seeds* non-carunculate, testa subpapillose-porous; endosperm fleshy, greenish; embryo straight; radicle cylindrical; cotyledons plane, very short, and very broad. Tender, glabrous annual; *leaves* alternate, plane, entire, petiolate; *spikes* axillary, slender, floriferous above the middle, the *flowers* somewhat remote, sessile, the *lower* female, the *upper* male. *Capsules* glabrous, smooth.

Named from Aóniken, the savages of southern Patagonia, also called the *Tehuelches*.

A. PATAGONICA Speg.

Small, effuse, stems green or purple, obsoletely and obtusely subangulate, rather fleshy. *Leaves* orbicular to ovate, long-petiolate. *Spikes* twice as long as the subtending leaf, 5–7-flowered. *Flowers* small, the lower 3–4 female. *Sepals* acute, reflexed after dehiscence of the capsules, adorned with the columella persisting in the center. *Seeds* cinereous, subglobose.

S. Patagon., in sandy elevated places by Rio Chico, near Chonkenkaike.

Family 59. CALLITRICHACEÆ. Water-starwort Family.

Aquatic herbs, rarely terrestrial, with opposite, exstipulate, entire *leaves*, and minute, perfect or monœcious, axillary flowers. *Perianth* none. *Bracts* 2–none. *Stamen* 1. *Ovary* 4-celled, with 2 *styles*. *Seed* 1 in each cell, anatropus, with endosperm. *Fruit* 2–4-coccous.

Only 1 genus, 20 species, widely distributed (except in S. Africa).

CALLITRICHE Linn.

Characters of the Family.

1. C. DEFLEXA A. Br. (*C. pedunculata* A. Gray.)

Small annual, forming tufts on moist soil, without stellate scales. *Leaves* uniform, minute, obovate or obovate-lanceolate, crowded. *Bracts* none. *Pollen* subglobose, minute. *Fruit* minute, broader than long, dicoccous; mericarps subsinuate, convex dorsally, keels acute. *Stigmas* patent, persisting, and often reflexed. *Pedicels* long or short, reflexed, or spreading.

Amer., in warm and temperate parts. Swamps in Staaten I., and in Basket I.

2. C. OBTUSANGULA LeGall.

Upper leaves obovate, often rosulate, many-nerved; *lower* remoter and narrower. *Pollen* subglobose. *Fruit* handsome, rounded at the angles, sulci evanescent. *Stigmas* persistent, erect or spreading.

(Eur.); Staaten I. (var. *antarctica* Engelm.).

3. C. PALUSTRIS Linn. (*C. verna* L.)

Submerged *leaves* linear, the others obovate. *Fruit* sessile, oval, 2-bracted, flat on the face, longer than the styles.

(Eurasia and N. Amer., also in Kerguelen I.); Falklands; Fuegia.

4. C. VERNA Linn. (? being sterile here).

Varies much in foliage; upper and floating *leaves* usually oval and pediceled, 2-ribbed; *lower leaves* linear, 1-ribbed; rarely all linear. *Fruiting* pedicels short, with 2 falcate bracts at base; *fruit* tetragonal, lobes dorsally keeled or winged.

(Eur. and N. Amer.); Chubut, in swamps and pools near Lago Fontana.

Family 60. EMPETRACEÆ. Crowberry Family.

Low, evergreen, heath-like shrubs, with small, narrow, subsessile, crowded, shining, imbricated *leaves*, revolute at the margins; and *flowers* small, diœcious or polygamous, axillary or terminal. *Sepals* 3. *Petals* 2–3, or none. *Male flowers* with 2–4, usually 3, *stamens*. *Ovary* sessile, 2–several-celled, *style* cleft similarly. *Drupe* berry-like. *Seeds* with endosperm.

Species 5, in temperate and cold regions, and on mountains. (*Corema* is confined to S. United States.)

EMPETRUM Linn.

Flowers in the upper axils. *Petals* 3, purplish. *Drupe* black or red, with 6–9 nutlets.

Species 2, *E. nigrum* L. in Eurasia and N. Amer., with black, rarely white fruit, and the following:

E. RUBRUM Vahl. (*E. nigrum* L. var. *rubrum* DC.)

Drupe red. *Pubescence* on young leaves stronger than in *E. nigrum*.

(Tristan d'Acunha; Mts. of Chili); Falklands; S. Patagon., by Hatcher in the Cordilleras, in fruit Feb. 16, "quail and partridge feed on its berries." W. Patagon.; Magellan, Fuegia to Cape Horn. "Over the whole steppe region, and often in the rainy forest region and on the mountains." (Dusén.)

Family 61. CORIARIACEÆ.

Smooth shrubs, with angular branches, opposite or 3-whorled, *exstipulate leaves*, and small, 5-merous, hypogynous *flowers*, having distinct, small and fleshy *petals*. *Stamens* 10; *ovary* 5-lobed (sometimes 10-lobed), becoming indehiscent, *cocci* separated by the persisting *calyx-leaves*. *Styles* 5. Cocci 1-seeded, with very scanty *endosperm*.

Species about 8, scattered from the Mediterranean through Nepal, China to Japan; and New Zealand and neighboring islands; also in S. Amer. from Mexico to Patagonia.

CORIARIA L.

Only genus, fig. in Eng. & Prantl, iii, 5, p. 128. Also fossil species. *C. thymifolia* Humb. in New Zealand. Kermadec and Peru to Mexico; other allied forms in Peru and New Zealand, in alpine regions.

Coriaria ruscifolia Feuill.

Sarmentose shrub, with flexible, pendent *branches*. *Leaves* sessile or nearly so, ovate-lanceolate, punctate-acute, 5–7 cm. long, opposite, sometimes in whorls of 3–4. *Flowers* racemed. Fleshy *petals* about the fruit are azure. Height 1–3 meters; a poisonous plant.

(New Zealand, Kermadec, and Chatham I.; Chili); Chubut, rare in shrubberies near Carren-leofú and Bolson. The fleshy petals yield a wine to the natives of New Zealand; whilst the fruit is poisonous.

Family 62. Anacardiaceæ. Sumach Family.

Trees or shrubs, with acrid sap, and mostly alternate, exstipulate, simple or compound *leaves*, without pellucid dots, the petioles often winged; and regular, sometimes diclinous *flowers*. *Calyx* 3–7-cleft. *Petals* 3–7, hypogynous, or none. *Stamens* as many as the petals, or differing, inserted on a hypogynous disk. *Ovary* in staminate flowers 1-celled; in the pistillate flowers 4–5-celled, *Styles* 1–3. *Ovules* 1 in each cell. *Fruit* a small drupe. *Endosperm* scanty or none.

Species 400, most in warm regions.

SCHINUS Linn.

Leaves simple or odd-pinnate. *Flowers* small, white, diœcious, in panicles. *Stamens* 10. *Female flower* with fine staminodes, 1-celled; *style* 3-branched or 1; ovule pendulous. *Drupe* globular, chartaceous.

Species 12, in warm parts of S. Amer.

1. S. crenatus (Phil.) Engl.

Branches short, cinereous. *Leaves* elliptic, varying, mostly acute both ways, crenate upwards, with prominent midrib and immersed lateral nerves. *Racemes* shorter than the leaves; *bracteoles* semiovate, marginally ciliate; pedicels slender. *Calyx-lobes* ovate; *petals* thrice as long, oblong. *Ovary* subglobose; *styles* distinct, with 3-lobed capitate *stigma*.

(Chilian cordilleras); Patagon., Chubut, in mountain woods.

2. S. dependens Orteg. (*Duvaua præcox* Gris.) Incense-bush.

Leaves simple. *Flowers* 4–5-merous; *styles* united. *Stamens* unequal. Many varieties with the leaves differing, from broad to narrow, or reduced to the sagittate petiole. (Fig. 104 in Eng. & Prantl, iii, 5, p. 163.)

(Chili, S. Brazil; Argent.); N. Patagon. A low bush with crooked branches and thorns; a purgative resin got from its trunk is used medicinally. *Incense-bush*, "Mata de Incienso."

S. Patagon., by Rio Sta. Cruz, with thick, entire leaves.

3. SCHINUS LATIFOLIUS Engl.

Leaves subcoriaceous or membranous, oval to oval-oblong, 3–7 cm. long by 15–30 mm. broad, obtuse or acute, serrate-dentate; *petioles* terete, slightly sulcate above, 5–9 mm. long. Inflorescences 1–2, axillary or sometimes extra-axillary. *Calyx* 4–5 mm. long. *Fruit violet.*

4. S. MONTANUS (Pb.) Engl.

Pubescent, with thick, subscariose *leaves*, the upper petioles very thick; blades truncately oval, obtuse, or apiculate, entire or wavy-margined, about 4 cm. long. *Inflorescence* shorter than the leaves.

S. Patagon., in shrubberies near Lago Argentino.

S. MONTANUS PATAGONICUS Phil.

Shrub 2 m. high. *Leaves* petiolate, with their *margins* obscurely crenate towards the apex.

(Cordilleras of Valdivia); N. Patagon.; by Lago Lajara.

(*S. molle*, found farther north, is the chief *Incense-bush*, and has a sugary edible drupe. Fragments of its leaf move by jerks when floating on water, being impelled by the exit of the volatile oil.)

Family 63. CELASTRACEÆ. Staff-tree Family.

Trees or shrubs, with simple *leaves*, *exstipulate* or having small, *caducous stipules*. *Flowers* small, perfect, 4–5-merous, with a disk supporting the *stamens* which are isomerous and alternate with the petals. *Ovary* superior or joined to the disk, 3–5-celled; *cells* 1–2-ovulate. *Style* short, thick. *Fruit* a capsule. *Seeds* enclosed in a showy arillus and with a large *embryo* in the axis of *endosperm*.

Species 350, in warm and temperate climates.

KEY TO THE GENERA.

1. Fruit dehiscing, 2- (rarely 3-) celled. Flowers 5-merous. Disk fleshy, convex, stamens inserted beneath it. Seeds arilled. Leaves alternate, evergreen. 1. *Maytenus.*

2. Fruit indehiscent, 3–4, rarely 2-celled. Flowers 4–5-merous. Disk flat, lobed, stamens inserted between the lobes. Seeds arilled or not. Leaves opposite or alternate or whorled. 2. *Rhacoma.*

("Distinguished from *Maytenus* by its capsules remaining closed, whilst those of *Maytenus* burst open.")

1. MAYTENUS Feuill. ex Juss. Gen.

Unarmed, evergreen shrubs, with alternate, petiolate, coriaceous, serrate *leaves*, and axillary, polygamous, 5-merous flowers, solitary or fascicled, or cymose. *Ovary* immersed in the orbicular disk; its cells 1- (rarely 2-) ovuled. *Seeds* with crustaceous testa.

Species 70, S. Amer., with 3 sp. in Mex., 1 in Galapagos, and 1 in St. Vincent I.

1. M. BOARIA Molina. (*M. chilensis* DC.)

Leaves elliptical-oblong, attenuate at base, apically acuminate, serrate. (Chili); N. Patagon.; valleys of Upper Limay and Chubut. "A small tree, rather variable in habit." (J. Ball.) Fuegia, at Lapataia, on the Beagle Channel.

M. BOARIA LATIFOLIA Reiss.

(Chili; Argentina); Patagonia.

2. M. MAGELLANICA (Lam.) Hook. f. (*Celastrus magellanicus* DC.)

Branches terete, pubescent. *Leaves* glabrous, elliptic-ovate, attenuate both ways, finely serrate. *Peduncles* short, 1-flowered; bracteoles fimbriate. *Calyx-segments* rounded. *Petals* ovate-oblong, obtuse. *Anthers* ovate-cordate. *Capsule* compressed, orbicular-obcordate, 2-celled, 2-valved, 2-seeded. *Arillus* white.

W. Patagon.; E. and W. Magellan. Dawson I.; Fuegia, Ushuaia, by Hatcher. Wood hard, used by the natives for arrows; called "lenadura" and aiâen.

2. RHACOMA Linn. (*Myginda* L.)

Shrubs varying as to leaves, etc. *Flowers* few, minute, usually 4- (or 5-) merous. *Calyx-tube* urceolate, its lobes rounded. *Petals* reflexed. *Stamens* inserted between the lobes of the disk; anthers globose. *Ovary* fused with the disk, 3–4-celled; cells 1-ovuled. Styles very short, lobed. *Fruit* small, dry, or drupaceous with pyrenes. *Seeds* arillate or not.

Species 14, in trop. Amer.; Central Amer.; Florida; West Indies; Chili (not Brazil).

RHACOMA (MYGINDA) DISTICHA Hook. f.

Branches distichous, divaricate. *Leaves* small (15 mm. long), very numerous, evergreen, glabrous, alternate, distichous, short-petioled, linear-oblong, entire, subacute, margin finely recurved, apiculate. *Flowers* axillary, solitary, short-peduncled. *Fruit* coriaceous, abortively 1-celled, 1-seeded, usually with an aril.

(Chili); Magellan; S. Fuegia, by Hatcher. It forms dense woods about Ushuaia. W. Patagon., forming undergrowth of woods of *Nothofagus betuloides* at 500 meters elevation (Dusén); Chubut, mountain shrubberies near Carren-leofú.

Family 64. RHAMNACEÆ. Buckthorn Family.

Erect or climbing shrubs or trees, often thorny, with simple, stipulate *leaves;* and small, perfect, 4–5 merous *flowers*, usually in cymes or paniculate; the *petals* inserted on the calyx, or none, and the *stamens* as many as, and opposite to, the *petals* or their place. *Anthers* short; disk fleshy; *ovary* sessile, 1–5-celled; *cells* 1-ovuled. *Fruit* a drupe, or capsule. *Endosperm* fleshy, rarely none.

Species nearly 600, in temperate and warm climates.

KEY TO THE GENERA.

A. Drupe 1-, rarely 2-celled. Leaves alternate, pinnately nerved. Flowers axillary, small, petals none. Leafy branches partly ending in spines. 1. *Condalia.*

A2. Drupe with several pyrenes. Thorny shrubs with opposite, decussating branches, leaves small or none. Calyx-tube produced above the disk.

b. Pyrenes indehiscent. Leaves 3-nerved, without transverse ridges. Flowers on short peduncles, below the axillary spines. 2. *Trevoa.*

b2. Drupes 3-coccous, cocci dehiscing elastically. Flowers on nodding pedicels, mostly axillary.

c. Leaves mostly persisting, rarely none; transverse, stipular ridges. 3. *Discaria.*

c2. Leaves mostly deciduous, very small or none, without transverse, stipular ridges. 4. *Colletia.*

1. CONDALIA Cav.

Glabrous shrubs, with *spinescent branches*, and alternate, subsessile, pinnately veined, entire, coriaceous *leaves;* and axillary, solitary or fascicu-

late *flowers*. *Petals* mostly wanting. *Ovary* immersed in the disk, free, 2–1-celled. *Fruit* a drupe, surrounded by the receptacular-cup, and partly adherent to it. Seed compressed, or globose, not furrowed.

Species 10, in warm parts of Amer.

CONDALIA MICROPHYLLA Cav. (*C. lineata* A. Gray.)

Branches and branchlets light gray. *Leaves* very small, on short spurs, spatulate to oblong, 4-10 mm. long, mucronate or cuspidate, marked by 3–4 nerves on each side underneath. Flowers shortly pediceled. *Calyx* whitish, 5-lobed. *Petals* none. *Drupe* oblong.

(Argentina, "piquillin.")

N. Patagon., in high places by Rio Negro (Wilkes Exp.).

Three kinds of this according to the color of the drupes, melano-, erythro-, xanthocarpa.

(*Phylica* Linn. not found in America, is often heath-like with entire revolute, tomentose leaves and superior flowers, having 3-celled ovary and tricoccous fruit. It has many species in S. Africa, Madagascar, Bourbon, etc. One, *P. arborea* Thou., is found in Amsterdam I., the only tree of that island, forming its woods; also in Tristan, 5,000 miles distant, and nowhere else. Neighboring islands of these are all treeless.)

2. TREVOA Miers.

Leafy, branching, spinescent shrubs, with opposite branches and 3-nerved *leaves*, and small, deciduous *stipules*. Flowers fascicled on 1-flowered *pedicels*, below the axillary spines, 4–5-merous. *Calyx* long-produced above the inconspicuous disk, hairy inside, and its tube persisting under the ovoid, 2–3-celled *drupe*.

Petals and *stamens* inserted in the mouth of the calyx.

Species 3, Bolivia and Chili.

T. PATAGONICA Speg.

Nearly leafless, densely spreading, with spinose branches, 1–3 meters high.

Leaves early deciduous, elliptical, entire, obtuse upward, briefly cuneate below with a short petiole. *Flowers* racemed, white, minutely appressed-pubescent, with a large, bilocular, globose *drupe*.

Patagon., in valleys by Golfo de San Jorge; in dry valleys along Rio Chubut. "Sometimes nearly leafless or with small, coriaceous leaves; sometimes with large, membranaceous leaves." (Speg.)

3. DISCARIA Hook.

Branching, mostly glabrous shrubs, rarely leafless, the *branches* decussating, often spinescent, transversely furrowed at the nodes. *Leaves* opposite, minute, coriaceous, mostly persisting. *Stipules* small, joined by lines. *Flowers* on axillary, nodding pedicels. *Calyx-tube* continued above the disk, bearing the 4–5 *petals* (or petals none), and the stamens. *Ovary* 3-celled, immersed in the disk. *Drupe* dry, 3-coccous, cocci at length dehiscing, imbedded in the base of the calyx.

Species 12, chiefly in extratropical and Andine S. Amer.; also 1 each in the Galapagos, Australia and N. Zealand; some cultivated.

Key to the Species.

A. Leafless. Branches jointed, ending in a spine.	*articulata.*
*A*2. Nearly leafless. Branches virgate, spinose.	*longispina.*
*A*3. Leaves serrate, sparse.	
b. Flowers 4-merous. Leaves 12 mm. long; spiny branches as of *Ulex.*	*discolor.*
*b*2. Flowers 5-merous. Leaves 20 mm. Spines coarse.	*serratifolium.*
*A*4. Leaves entire.	
b. Spinose. Leaves lance-linear to oblong, caducous.	*febrifuga.*
*b*2. Unarmed. Leaves subovate.	
c. Calyx 5-cleft. Low, procumbent.	*andina.*
*c*2. Flowers 4-merous.	*magellanica.*
*b*3. Leaves subspatulate. Flowers 4-merous.	*integrifolia.*
*A*5. Leaves crenulate-toothed, elliptic-oblong.	
b. Branches virgate, with long spines.	*cognata.*
*b*2. Branches erect, some spinescent.	*foliosa.*

1. D. ANDINA (Miers) Speg. (*Notophæna a.* of Miers.)

Low, procumbent, unarmed. Branchlets tortuose, nodose, very leafy. *Leaves* opposite, from long, scaly, axillary buds, ovate, obtuse at both ends, or basi-acute; entire, thick, sparsely pilose all over, pinnately nerved; the petiole short, channeled, puberous. *Stipules* broad, bifid, ciliate, partly connate. *Flowers* few, aggregate. *Peduncle* exceeding the petiole, 1-flowered, erect, pilose. *Calyx* 5-cleft, its lobes half as long as the stamens. *Ovary* glabrous.

(Chilian Andes); N. Patagon., by Lago Nahuel-huapi.

2. DISCARIA ARTICULATA (Phil. sub *Colletia*) Miers.

Leafless, glabrous; branchlets strict, having 3 internodes, articulated, ending in a spine. *Flowers* crowded, with 4 stamens. *Pedicels* as long as the white, glabrous calyx; calyx-teeth erect, broadly triangular. *Petals* lanceolate, equalling the calyx-teeth. Genitalia included.

"The lines joining the stipules prove it to be *Discaria*, not *Colletia*." (O. Ktze.)

(Chili); Patagon. in shrubberies near Carren-leofú.

3. D. COGNATA (Miers sub *Notophæna*).

Branches long, virgate, angled-striate, glabrous, with long, pungent *spines*, floriferous at their middle. Young branches floriferous, arising below and exceeding the spines. *Leaves* opposite, elliptic-oblong, crenate-serrate, narrowing upwards; green above, pale underneath. *Stipules* and transverse sheath manifest. *Flowers* 2–4, fasciculate on long peduncles, 2–4 times exceeding the petiole and calyx. *Calyx* 4-cleft, glabrous. *Stamens* 4, shorter. *Ovary* pilose, style long.

Chiloe I.; Patagon., by Lago Nahuel-huapi and Lago Argentino. "Scarcely receding from the type. Leaves more numerous and deficient in spinescent branches."

4. D. DISCOLOR (Hook. f. sub *Colletia*) B. & H.

A small, spiny, glabrescent shrub, with bright, green *bark*, of habit of European *Ulex*. *Branches* rigid, terete, sparsely leafy, with jointed spines. *Leaves* evergreen, elliptic-oblong or obovate, obtuse, obscurely serrate, attenuate to a short petiole, paler underneath, 12 mm. long. *Peduncles* axillary. *Calyx* 4-cleft. *Cocci* pilose, 1-seeded. *Testa* crustaceous, shining.

(Chili); Patagon., Magellan, Fuegia, Ushuaia, Navarino I. By Rio Aysen in W. Patagon. (Dusén.)

5. D. FEBRIFUGA Mart.

Leafy, becoming leafless; branches slender, green when young, often finely white punctate. *Spines* terete, subulate, 2-leaved. *Leaves* petioled, lance-linear to oblong, 1-nerved. *Stipules* acute, sheathing, the branch ciliolate when young. *Calyx* as long as the pedicel; *capsule* longer (6–8 mm.) shining, reticulate.

(Brazil); N. Patagon., by Rio Negro. Fig. G–J in Eng. & Prantl, iii, 5, p. 422. The bitter cortex of its root is used as a febrifuge, "Brazilian china."

6. Discaria foliosa (Miers sub *Notophæna*) Speg.

Leafy shrub or small tree, the *branches* not spreading, some of them spinescent, the spines erect, striate, pale to fuscous-red. Young branches unarmed, erect, bearing leaves and flowers. *Stipules* opposite, reddish, broad-trigonal, concave or 2-toothed, united around the stem. *Leaves* opposite, elliptical to oblong, obtuse or mucronulate, crenulate-toothed, green above, glaucous beneath, pinnately nerved. *Flowers* 3-fascicled from each axil. *Peduncle* erect, at length curved. *Ovary* pilose. *Style* glabrous, long. The *spines* are jointed in the middle, and there floriferous. In the young branches the *stipules* form in each axil a hollow cup with 2 lobes.

(Chili); N. Patagon., by Rio Negro.

7. D. integrifolia Speg.

Leaves entire, subspatulate, emarginate, shortly cuneate-petiolate, glabrous. *Flowers* axillary, ternate; peduncles twice as long as the petioles. *Calyx* 4-partite, subglobose, rose-purplish.

S. Patagon., by Lago Argentino.

8. D. longispina (Hook.) Miers.

Glabrous shrubs, nearly leafless, with virgate-spinose branches; *spines* opposite, remote, very long, often arcuate, mostly naked, callous-pungent. Young branches from beneath the spines; with leaves and flowers in the axils. *Leaves* opposite, small, long-elliptical, acute, entire, rarely with toothed apex; shining green, fleshy. *Stipules* red, ovate, 2-toothed, ciliate, united, minute. *Flowers* often crowded in the axils. *Calyx* as long as peduncle, urceolate, with 4 erect segments. *Petals* 4, acute both ways. *Stamens* subequal to petals. *Ovary* glabrous, globose. *Style* short. *Fruit* with 3 cocci, separating.

Argentina to N. Patagon.

"The thick roots serve as fuel; and the flowers are sold in Buenos Aires." (J. Ball.)

9. DISCARIA MAGELLANICA (Miers sub *Notophæna*).

Unarmed, finely pubescent; with short internodes. Young *leaves* ovate-oblong, obtuse at both ends, entire, or obscurely dentate, 5–6 mm. long. *Flowers* 4-merous; the young 2 mm. long, on peduncles as long.

W. Magellan, on Cordilleras.

10. D. SERRATIFOLIA (Vent.).

Armed with coarse *spines; leaves* few, about as long as the internodes (2 cm.), oblong to linear-oblong; apically emarginate and mucronulate; attenuate downwards, shortly serrate-toothed, the teeth glandular; blade thickish and nerveless. Intrapetiolar *stipules* confluent into a ring. *Flowers* 1–2, axillary, crowded, 5-merous, shorter than the peduncles.

(Chili, cultivated) Patagon., to the Antarctic region.

4. COLLETIA Comm.

Branches decussating, spinescent. *Calyx-tube* much produced above the disk; *petals* and *stamens* inserted in its throat. *Ovary* immersed in the disk, becoming a dry coriaceous tricoccous drupe; *drupelets* dehiscing. *Leafless* or with minute, opposite, *deciduous leaves*, and *stipules* not transversely joined. *Flowers* 4–6-merous, below the spines on nodding, 1-flowered peduncles.

Species 13, chiefly in extratropical S. Amer. (Fig. in Eng. & Prantl, iii, 5, 422, A. B.) *C. spinosa* Lam. of S. Brazil, has wood with purgative sap, from which an alcohol is prepared as a medicine for intermittent fevers.

1. C. DONIANA Gay. (*Ochetophila trinervis* Poepp.)

A tree with rather dense crown. Glabrous, branching, with long, leafy, horizontal branchlets. *Leaves* opposite, ovate-elliptical, erect, attenuate to the petiole, apically obtuse, or mucronate, entire, pale underneath, 3-nerved. *Stipules* small, lanceolate. *Flowers* solitary in the axils, or fascicled, on short peduncles. *Cocci* smooth, cleft by a median slit.

N. Patagon., by Rio Negro, and near Rio Colorado. "One of our examples had spines 1 cm. long in the axils of the decussate leaves; the others had none." (Nied. & Lor.) In mountain shrubberies by Lago Nahuel-huapi.

2. COLLETIA FEROX Gill. & Hook.

Spines strong, awl-shaped. Fascicles of *flowers* scattered. *Calyx* oblong-cylindrical. *Anthers* nearly sessile. Perennial.

(Chili); Patagon., in gravel beds by Rio Chubut.

C. FEROX PUBERULA Gay.

(Chili); Patagon., in gravel beds near Rio Chubut. "The Patagonian form is densely and fasciculately branching, strong, obscurely green, its branchlets minutely and laxly pulverulent hairy."

3. C. LINEATA A. Gray.

Glabrous. Branches divaricate, spinescent. *Leaves* spatulate, or obovate, mucronate, thick, coriaceous, veinless on upper surface, nervose underneath, with short petioles. *Calyx* with 5 whitish lobes. *Petals* apparently none. *Drupe* oblong.

N. Patagon., by Rio Negro.

4. C. SPINOSA Lam.

Smooth shrub, with striated branchlets and spines; *spines* long, simple, stout. *Leaves* oblong-ovate, smooth, entire or slightly dentate towards the apex. *Flowers* solitary or few, in an inflorescence. *Pedicels* 2 mm. long. *Calyx* cylindrical, 5-toothed. Filaments short or bent down.

(Chili.)

C. SPINOSA VALDIVIANA (Phil.).

Densely pubescent. Branching at angle of 40° (60° in the type). *Flowers* fasciculate; *stamens* sometimes 4.

(Valdivia); Chubut, by Carren-leofú.

Family 65. ELÆOCARPACEÆ.

Trees or shrubs, with alternate or decussate, simple, stipulate *leaves* and regular, inferior *flowers;* the *petals* mostly free and apically much cleft, not contorted. *Stamens* numerous, sometimes on an androphore, anthers 2-celled, mostly opening by pores. *Ovary* mostly 2–many-celled; each *cell* many-ovuled. *Style* 1, branching. *Fruit* capsular.

Species 120, chiefly tropical.

1. Petals valvate, lobed or incised. Fruit a leathery capsule. Trees. *Crinodendron.*
2. Petals imbricate, lobed. Fruit a berry. Shrubs with opposite, serrate leaves. *Aristotelia.*

1. CRINODENDRON Mol.

Trees, with serrate leaves, and solitary, axillary, 5-merous flowers. *Petals* 5, exceeding the calyx, 3-lobed, cucullate. Androgynophore large, hairy, 10-lobed. Ovary 3–5-celled. Capsule coriaceous, loculicidal.

C. PATAGUA Mol. (*Tricuspidaria dependens* R. & P.)

Evergreen, with alternate, oval-lanceolate, serrate *leaves*, 6 cm. long, and fleshy, rose-colored flowers on long peduncles. Capsule subrotund, silky-pilose.

Valdivia; Chiloe; Magellan. (Fig. in Eng. & Prantl, iii, 6, p. 4, C–E). Dye is obtained from its bark. Reiche states that in the Province of Patagua it has white flowers, but that southward they are pink.

2. ARISTOTELIA L'Her. (*Friesia* DC.)

Shrubs, mostly with subopposite *leaves* and *flowers* axillary or lateral, racemose, usually polygamous. *Sepals* 4–5; petals as many, induplicate-valvate, incised or rarely entire. *Stamens* many, along with the *petals* inserted around an elevated, glandular torus. *Berry* indehiscent.

Species 7, 1 in Chili and Patagon., 1 in Tasmania, 2 in Australia, 3 in New Zealand.

A. MAQUI L'Her.

Berries as large as peas, dark purple, ultimately black, acid and edible and yielding under preparation a medicinal wine.

(Chili); Patagon., Chubut; by Lago Nahuel-huapi; Carren-leofú.

Family 66. MALVACEÆ. Mallow Family.

Mostly herbs or shrubs, with alternate, palmately-nerved *leaves*, often having stellate hairs and deciduous *stipules*. *Flowers* regular, often large, mostly perfect. *Sepals* 5 (3–4) united, often bracteolate, the lobes valvate. *Petals* 5, convolute. *Stamens* numerous, hypogynous, monadelphous, forming a column around the pistil. *Anthers* reniform, 1-celled. *Ovary* several-celled; the styles united, separating upwards. *Fruit* capsular; *seeds* reniform. *Embryo* curved. *Endosperm* little or much.

Species 800, in tropics and warm regions.

KEY TO THE GENERA.

In all these the carpels are arranged in a circle, and the staminal column is antheriferous at the top.

A. Style branches as many as the carpels.
  b. Carpels each many-seeded, at least 2-seeded.
    c. Involucel none. 1. *Abutilon*, p. 569.
    c2. Involucel 3-leaved. 2. *Sphæralcea*, p. 570.
  b2. Carpels 1-seeded.
    c. Seeds erect. Involucel of 1–3 distinct bracteoles or none.
      d. Stigma linear, on inner side of the style-branches. Carpels not beaked. 3. *Malva*, p. 571.
      d2. Stigmas capitate, terminating the style-branches, which are often thickened above. Carpels beaked. 4. *Malvastrum*, p. 572.
    c2. Seeds pendulous, with dorsal raphe. Involucel none.
      d. Style-branches slender or thickened upwards, stigmatic on inside. Carpels fewer than 5. 5. *Plagianthus*, p. 572.
      d2. Style branches capitate, apically stigmatic.
        e. Carpels not winged, 5–∞. 6. *Sida*, p. 572.
        e2. Carpels with 2 lateral wings. 7. *Cristaria*, p. 575.

AA. Style-branches twice as many as the carpels. Involucel of 5–∞ bracteoles. Carpels spiny or tubercled on the surface, 1–3-rostrate. Hypophyl not glandular. 8. *Pavonia*, p. 577.

1. ABUTILON Gaertn.

Chiefly herbs or shrubs, with cordate *leaves* and axillary flowers. *Involucels* none. *Calyx* 5-cleft. *Staminal* column antheriferous at apex. *Ovary* of 5–many carpels, each with several reniform *ovules*, falling away at maturity.

Species 90, in warm countries, some cultivated for their beauty.

1. A. BICOLOR Phil.

Fruticose. *Leaves* small, fasciculate, white underneath, lamina scarcely exceeding the petiole, 3-parted, the midlobe 3-lobed, the lateral lobes entire or 2-lobed. *Peduncles* solitary in the axil, exceeding the leaves. *Calyx* tomentose-white, broad funnel-form with short, triangular teeth. *Corolla* broad-funnelform, its *petals* thrice as long as the calyx, violaceous at base, sulphurous above.

(Chilian Andes at 4,000 meters); Patagon., at Chonkenk-aike by Rio Chico, etc.; by Lago Argentino.

(These have subpinnately lobed leaves with short-petioles; fruit cupulate, scarcely accrescent. Speg.)

2. ABUTILON VIDALII (Ph. sub *Cristaria*) Speg. (Plate XXI, *A.*)

Low shrub; with ash-colored branches and *stellately tomentose* petioles and peduncles. *Leaves* cordate, oblong-ovate, obscurely 3-lobed, crenate, 12 by 9 mm. *Calyx* large; its lobes broad-triangular, 2–3-toothed on both sides. *Corolla* twice as long as the calyx. *Capsule* 5-celled, the carpels prolonged at the external angle to one appendage. *Seeds* 2–3 in each cell.

S. Patagon., by Rio Sta. Cruz (Hatcher); Chubut, in plain near Lago Musters. *Leaves* large, with rounded, deeply cut lobes. Teeth of *calyx-lobes* everted. Dense stellate pubescence over the leaves and the calyx. Corolla purplish-pink. No calyculus on Hatcher's specimens.

2. SPHÆRALCEA St. Hil.

Herbs or shrubs. *Bracteoles* 3, distinct or partly united. *Calyx* 5-parted more or less deeply. *Carpels* 5–many, each 2–3-ovuled, separating from the axis when ripe, not septate between the seeds. *Styles* as many as the carpels. *Seeds* reniform.

Species 30, America and S. Africa.

1. S. AUSTRALIS Speg.

Perennial shrub branching from the base, the *branches* slender, arcuate-ascending, flexuose, subsimple, becoming glabrate. *Leaves* remote, pinnatipartite, the segments lobed or toothed, obtuse, hoary on under surface, green and subglabrate above. *Flowers* in the upper axils, solitary or ternate, subsessile. *Calyx* 5-parted; *sepals* lanceolate, acute, appressed, silvery-hoary. *Corolla* large, glabrous, livid. *Ovary* tomentose; *carpels* generally 2-seeded, not aristate.

Patagon., in dry places by Rio Chubut, and between Rio Negro and Rio Colorado. The hairs all stellate. Root long (50–150 cm.), branches 15–75 cm. high.

2. S. BONARIENSIS (Cav.) Griseb.

Stems 30 cm. long, ascending-suffrutescent; *flowers* crowded in the axils and approximate at the apex.

Argentina.

SPHÆRALCEA BONARIENSIS CISPLATINA O. Ktze.

Lower axillary inflorescence 5 cm. long; upper shorter, not exceeding the mature leaves.

N. Patagon., by Rio Colorado.

3. S. PATAGONICA (Niederl. sub *Malva*) Speg.

Erect undershrub, 30–50 cm. high; many-stemmed, the stems branching, flower-bearing upwards; *white-stellate* woolly. *Leaves* 3–9 cm. long, petioled, subtriangular or ovate or narrower, 3-lobed, the lobes crenate-dentate. *Peduncles* short, 3-flowered, or 1-flowered. Bracteoles setaceous. *Calyx-lobes* lanceolate, acuminate. *Corolla* much longer, lilac, glabrous. *Carpels* 5–25, apicle short, oblique, scrobiculate beyond the middle.

N. Patagon., by shore of Rio Negro; and in Choele-choel I. by Rio Chubut, and Golfo de San Jorge.

3. MALVA Linn. Mallow.

Herbs, with toothed or lobed *leaves* and showy *flowers*. *Involucel* usually of 3 bracts. *Staminal* column antheriferous at its top. *Carpels* numerous with linear styles and stigmas; the cells 1-ovuled, becoming in fruit a ring of indehiscent, beakless mericarps, which separate from the short axis. *Seed* ascending.

Species 30; most in the Mediterranean region; some naturalized in N. Amer.; several in Chili; 1 in Australia.

1. M. NICÆËNSIS All.

Stem herbaceous, prostrate. *Leaves* angulate, acute, cordate, 5-nerved. *Pedicels* 3–4, erect, four times shorter than the petioles, each 1-flowered. *Calyx* pilose, shorter than the corolla. *Flowers* purplish to white.

(Mediterr.); Magellan, doubtless introduced.

2. M. PARVIFLORA Linn.

Stem herbaceous, spreading. *Leaves* subrotund, obtusely angled, crenate, glabrous. *Flowers* axillary, glomerate, sessile. *Corolla* scarcely exceeding the calyx. *Carpels* rugose above, toothed on the margin.

(Mediterr.); N. Patagon., near Rawson (Dusén); Carmen de Patagones.

4. MALVASTRUM A. Gray.

Herbs, with the *bracteoles* small, 1–3 or none; and *staminal* column antheriferous up to the top. *Ovary* 5–many-carpellary, the cells 1-ovuled. *Style* branches distinct, filiform or clavate. *Mericarps* with beaked tips. *Seed* ascending, reniform.

Species 75, Amer. and S. Africa; 2 species tropically cosmopolitan.

M. SULPHUREUM (Gill) Griseb. (*Sida sulphurea* Torr. & Gr.)

Covered by *stellate hairs* and silvery scales. *Stems* branching, erect or fastigiate. *Leaves* suborbicular-cordate or reniform, obscurely lobed; *petioles* of upper leaves shorter than the limb; of lower, longer; stipules linear. *Flowers* solitary in the axils. *Bracteoles* subulate. *Corolla* 4 cm. in diam., yellow (greenish when dry), marked by 6 rows of stellate hairs, outside.

Patagon., by Rio Negro; by Golfo de San Jorge.

5. PLAGIANTHUS Forst.

Mostly shrubs, with small, whitish *flowers*, axillary or in terminal spikes or panicles. *Bracteoles* none or remote. *Ovary* 2–5-celled; *cells* 1-ovuled; as many style-branches, stigmatose inwards. Ripe *carpels* abortively solitary, or separating from the axis; often indehiscent. *Seed* pendulous.

Species 7, Australia, New Zealand, and the following in Chili.

P. PULCHELLUS (Bonpl.) A. Gray.

Glabrous; *leaves* rather long-petioled, cordate-ovate to lanceolate, coarsely crenate. *Flowers* dicœcious, conglomerate in axillary racemes, small. *Calyx of males* broad-campanulate, *of females* subglobose.

(Province of Talcao, Chili, 35° S. Lat.) Patagonia? Also in Tasmania and S. E. Australia, "whence it originates."

6. SIDA Linn.

Mostly no bracteoles. *Staminal* column antheriferous at the top. *Carpels* 5–many, 1-ovuled. Style-branches stigmatic at the top. *Carpels* indehiscent or at length apically 2-valved. Seed pendulous.

Species 75, in warm climates.

KEY TO THE SPECIES.

A. Leaves broad-ovate to cordate, with pinnatifid segments.
  b. Fruit glabrous.
    c. Upper leaves stalked. Flowers blue. *ameghinoi.*
    c2. Upper leaves nearly sessile. Flowers rose-lilac, showy. *chubutensis.*
  b. Fruit laxly-hairy. Upper leaves nearly sessile. Petals long, cyaneous. *tchuelches.*
A2. Leaves serrate.
  b. Petals not large, glabrous. *hastata.*
  b2. Petals twice as long as the calyx, hairy below. *leprosa.*
A3. Leaves crenate.
  b. Subrotund-cordate, coarsely crenate. *macrodon.*
  b2. Reniform-cordate, white-stellate. Flowers yellow to coppery. *obliqua.*

1. SIDA AMEGHINOI Speg.

Perennial; stellate-hoary; creeping or erect. *Leaves* remote, broad-ovate to cordate, 3-partite; their segments pinnatifid, obtuse. *Petiole* as long as the blade in upper leaves; twice as long in lower. *Stipules* triangular to ovate. *Flowers* subsolitary in the upper axils. *Peduncles* jointed above the middle; not bracted. *Calyx* 5-cleft half-way; its lobes subacute. *Corolla* slighty longer, glabrous, blue. *Fruit* conoid-hemispherical, glabrous, 12-carpeled.

"Pretty. Near *Cristaria*, but with wingless carpels."

S. Patagon., dry rocky places near Chonkenk-aike, on Rio Chico; at Golfo de San Jorge.

2. S. CHUBUTENSIS Speg.

Arcuate-erect, pale green, perennial; all the hairs minute-stellate. *Leaves* remote, lax-hairy both sides; *limb* broad-ovate-cordate, or suborbicular, 3–5-partite, the segments oblanceolate, pinnatifid or trifid, lower petioles twice as long as the limb; uppermost very short.

Stipules lanceolate. *Flowers* erect, becoming cernuous, solitary in the upper axils. *Peduncle* jointed upwards, bractless, much shorter than its subtending leaf. *Calyx* hispid, 5-cleft, ebracteolate; lobes ovate, acute. *Corolla* glabrous, large, rose-lilac. *Fruits* hemispherical-conoid, glabrous, 16-carpellate.

Patagon., by Rio Chubut, and Golfo de San Jorge. 15–50 cm. high.

3. S. HASTATA S. Hil.

Prostrate, branching perennial; stems flattish upwards. Stellate and lax hairs intermingled. Leaves petiolate, oblong to broad-elliptical, or

suborbicular, base broadly cuneate, 5-nerved, serrate. Flowers solitary in the axils, long-pediceled. Calyx large, plicate-pentagonal, cleft half-way. Petals slightly longer, obovate; glabrous. Carpels 10–13, apex elongating, at length dehiscing.

(Argentina); in meadows near Bahia de San Blas.

4. Sida leprosa (Ort.) Schum.

Perennial, with woody base; many-stemmed, branching below, with scaly indumentum. Leaves petiolate, the lower suborbicular, basi-cordate or truncate, serrate upwards, pedately 5-nerved. Stipules narrow. Flowers solitary in the axils, pediceled, sometimes with an accessory branchlet. Calyx large-campanulate; lepidote to stellately tomentose, divided half-way into acute, triangular lobes; with 3 shorter bracteoles. Petals twice as long as calyx, obovate, ciliolate-margined half-way, pilose beneath. Ovary depressed, 6–7-lobed. Styles long, connate half-way. Carpels rostrate, scarcely dehiscing.

(Cuba, Argentina, a var. in N. Amer.); N. Patagon., at Carmen de Patagones.

5. S. macrodon DC.

Hirsute. Leaves subrotund-cordate, coarsely crenate. Peduncles solitary, 1-flowered, exceeding the petioles. Carpels 10, not beaked.

(Brazil); N. Patagon., by Rio Negro.

6. S. obliqua Nutt. (*S. sulfurea* A. Gray.)

White-stellate. Stems prostrate. Leaves reniform, cordate, short-petioled, lobed, crenate-dentate, silvery above. Peduncles solitary, axillary, shorter than the leaves. Involucre of 3 narrow bracteoles. Petals yellow, turning coppery.

N. Patagon., by Rio Negro.

7. S. tehuelches Speg.

Perennial, green to silvery, all the hairs minutely stellate. Stems several from the root-crown, subsimple, fistulose, subrigid. Leaves remote, silvery green, broad ovate-subcordate or suborbicular, 3–5 parted; segments from the middle, ovate or lanceolate, pinnatipartite. Petioles of lower leaves puberulous, often one third longer; the uppermost short or

none. Stipules linear. Flowers laxly racemose, often ternate on the end of the peduncle, pedicels short. Calyx green-silvery, 5-cleft, lobes ovate, obtusish, tribracteolate. Corolla twice as long, cyaneous, glabrous. Ovary 12–14-carpeled, rough. Fruit orbicular, laxly hairy.

Patagon., in meadows between San Julian and Rio Deseado and near Golfo de San Jorge. 15–25 cm. tall.

7. CRISTARIA Cav.

Upright or decumbent, mostly hairy herbs, with angular-lobed or partite *leaves*, and axillary, solitary or racemed *flowers*. *No involucel*. *Stigmas* terminal. *Mericarps* with 2 superior wings which at length cause them to spring open.

Species 25, Chili and Peru.

Key to the Species.

A. Leaves trisected; the segments cut. Flowers panicled, purplish.	*ecristata*.
A2. Lower leaves rounded, entire or 3-parted. Flowers racemed, blue.	*heterophylla*.
A3. Leaves rounded; lower 5-, upper 3-parted, and further cut.	*patagonica*.
A4. Leaves runcinate. Flowers solitary, violaceous.	*hastata*.
A5. Leaves palmatisect; the lobes 3-cleft. Umbels.	*kuntzii*.
A6. Leaves pinnatisect.	
b. Glabrous. Plant decumbent. Flowers large.	*intermedia*.
b2. Sparsely hairy. Erect annual. Flowers violet.	*linoides*.

1. C. ecristata A. Gray.

Erect, branched. Cauline *leaves* trisected, the lobes 2-parted and further cut. *Pubescence* stellate. *Upper leaves* bract-like. *Flowers* loosely racemose-panicled, pale purple. *Carpels* 12–16. *Capsule* conical.

N. Patagon., by Rio Negro.

2. C. hastata Phil.

Subglabrous, green to glaucescent. *Stipules* ovate, glabrous or ciliate. *Petioles* thick, glabrous, half as long as the limb. *Leaves* subruncinate-dentate, stellately hairy underneath, glabrous or sparsely stellate-hairy above. *Peduncles* glabrous, articulate above the middle, ebracteolate, 1-flowered. *Calyx* 5-cleft, stellate-pilose on the margin and 3 nerves, green; lobes triangular, acute. *Corolla* large, glabrous, violaceous.

N. Patagon, Neuquen, at Confluencia, and at Lago Nahuel-huapi.

3. CRISTARIA HETEROPHYLLA (Cav.) Hook. & Arn.

Rough annual, covered by stellate hairs. *Stems* various, not much branched. *Lower leaves* orbicular-oval, entire or 3-lobed. *Median leaves* tripartite, with divergent and sinuose segments; stellate beneath and on margins; lamina 4 cm. long, petiole as long. *Stipules* short, triangular. *Racemes* long, the lowest flowers axillary. *Peduncles* exceeding the calyx. *Sepals* hirsute, pungent, 15 mm. long. *Petals* twice as long, blue. Fruit unknown.

N. Patagon., at confluence of RR. Limay and Neuquen.

4. C. INTERMEDIA Gay.

Rather glabrous. *Stem* terete, decumbent. *Leaves* glabrous, rarely ciliate, pinnatipartite, the lobes obtuse, incised or coarsely toothed. *Petioles* striate. *Flowers* large; *calyx* very hirsute.

(Chili); Patagon., Chubut by Teka-choique.

5. C. (?) KUNTZEI (O. Ktze.) Speg. (*C. patagonica* O. Ktze. non Phil.)

Nearly *stemless* perennial herb, 5 cm. high, white-tomentose, except the violet petals. *Leaves* long-petioled, palmatisect, 15 cm. long and broad, with trifid lobes, having ovate lobules. *Flowers* about 5, subumbellately crowded, with leafy bracts. *Calyx-segments* acuminate, 6 cm. long, shorter than the petals, tomentose. Fruit (?).

Patagon. (M. & T.). It has *no bracteoles*, and may belong to *Sida;* to be called *Sida patagonica* (O. Ktze.) Speg.

6. C. LINOIDES (Hieron. sub *Malvastrum*).

Annual herb, with terete *stem*, simple, erect, subglabrous, or with few stellate hairs. *Lower leaves* sparsely hairy, 3 cm. long; petiole 3 cm.; blade pinnatisect, the segments 3–4 pairs, linear, obtuse, subdentate. *Upper leaves* with fewer segments, glabrous; *uppermost* like linear bracts. *Stipules* subulate, small. *Flowers* in upper axils, pedunculate, solitary. *Calyx* 5-cleft, the segments obtuse. *Petals* ovate, violet. *Carpels* 10–12, 1-seeded.

N. Patagon., by Rio Negro.

7. CRISTARIA PATAGONICA Phil.

Erect to 10 cm. high. Densely stellate-pubescent. *Lower leaves* 5-, *upper* 3-partite, orbicular in outline. *Lobes* 3–5-partite; their partitions trifid, ovate-acute. Lower *peduncles* paired, equalling the petioles; upper crowded, exceeding the petioles. *Calyx* hirsute; half as long as the petals. Upper leaves are less divided, with linear-oblong segments.

N. Patagon., to foot of the Valdivian Andes.

8. PAVONIA Linn.

Herbs or shrubs, with stellate tomentum, or stiff bristles, or smooth. *Leaves* often angular or lobed. *Flowers* solitary or cymose in the axils. *Bracteoles* 5–many, separate or united. *Staminal* tube truncate or 5-toothed. *Carpels* 10; but either the anti-sepalous or the antipetalous may be suppressed; when ripe falling away, indehiscent or partly dehiscing; with 1–3 dorsal spines.

Species 70, chiefly American.

P. HASTATA Cav.

Leaves lanceolate, hastate, dentate. *Pedicels* 1-flowered. Bracteoles 5. *Carpels* unarmed. *Flowers* red, very venous.

(Brazil); N. Patagon., by Rio Negro.

Family 67. EUCRYPHIACEÆ.

Flowers heterochlamydeous, choripetalous, hermaphrodite, 4-merous, with numerous *stamens* on a hypogynous *disk*, and 5–18 *carpels*, connate except the styles, and separating at maturity from the *axis* on which they hang suspended until dehiscing. *Sepals* 4, united at top, and coming away like a cap. *Petals* 4, convolute in the bud, white. *Seeds* several, 2-ranked in the carpels, pendent; winged; with endosperm.

Evergreen *trees*, with opposite, entire or toothed or pinnate *leaves*, and connate *stipules*.

Species 5 in S. temperate regions, Chili, New South Wales, Tasmania.

EUCRYPHIA Cav.

The only genus. (*E. cordifolia* Cav., a Chilian species, fig. 68, in Eng. and Prantl, iii, 6, p. 130.)

Eueryphia patagonica Speg.

A tree, 10 m. high, with fastigiate branches, and densely hispid-villous branchlets. *Leaves* simple, decussate, short-petiolate, long-lanceolate, basally rounded, scarcely cordate, attenuate upwards, acute, irregularly serrate, the teeth acute-cuspidate-mucronate; subcoriaceous, glabrous on the upper surface, cinerascent on the lower, with villous nerves. *Flowers* solitary, long-peduncled; *sepals* pubescent, *stamens* numerous, glabrous.

N. Patagon., in woods near Lago Nahuel-huapi.

Family 68. Hypericaceæ. St. John's-wort Family.

Herbs or shrubs, with opposite or rarely whorled, simple, exstipulate *leaves*, pellucid-punctate or black-dotted. *Flowers* regular, perfect, 5–4-merous, hypogynous, with many *stamens*, often in sets of 3 or 5; and with 1–7-, mostly 3-celled *ovary*, with as many *styles*, and numerous *seeds*, without endosperm.

Species 280, chiefly in warm and temperate climates. (In Eng. and Prantl, iii, 6, p. 205, they are made a subfamily of Guttiferæ.)

HYPERICUM Linn.

Flowers chiefly cymose, yellow, 5-merous. *Ovary* 1-celled, with 3–5 parietal placentæ.

Species 210, widely distributed.

H. connatum Lam.

Stems suffruticose, terete. *Leaves* deltoid, perfoliate, obtuse, punctate underneath, venous-reticulated, inflated at the margin. *Sepals* lanceolate, acute. *Stigmas* capitate.

(Argentina; Montevideo); N. Patagon.

Family 69. Frankeniaceæ.

Herbs or undershrubs, with stems jointed at the nodes, and decussate leaves, often involute and heath-like. Flowers in terminal or axial leafy dichotomies, pinkish; regular, hypogynous, heterochlamydeous. Calyx-leaves united, 4–7-lobed. Petals 4–7, not united, often having a lamellar

appendage to the claws. Stamens mostly in 2 series of 3 each; anthers versatile. Ovary 1-celled; 2–4 parietal or basal *placentæ*. Style branched. Seeds numerous, with endosperm.

Species 34, on dry or saline wastes of warm climates.

KEY TO THE GENERA.

1. Hermaphrodite. Anthers versatile extrorse, didymous. Petals broad with a ligular appendage inside. Placentæ all ovuliferous. Leaves fleshy. 1. *Frankenia.*
2. Polygamo-monœcious. Anthers introrse. Petals spatulate, with no ligula. Placentæ 3, only 1 ovuliferous. Leaves ericoid. 2. *Niederleinia.*

1. FRANKENIA Linn.

Flowers hermaphrodite and 5-merous. *Petals* with an extra tongue-formed lamina. *Stamens* usually in two series of 3, the outer smaller; *anthers* versatile-extrorse. *Fruit* trigonal, ovate-pyramidal, long, all its 3 *placentæ* with seeds.

Subgenus *Afra* is in Africa, Spain and Canaries; subgenus *Oceania* in Australasia and S. W. America, and northward to California.

1. F. CHUBUTENSIS Speg.

Glabrous perennial, prostrate, from a woody *caudex*. *Old branches* naked, thickish, subtetragonal, decussately nodulose. *Innovations* subherbaceous, tetragonal ochraceous-green; internodes long, branching dichotomously or unilaterally. Branchlets densely leafy; *leaves* decussate, connately sheathing, small, elliptic-ovate, obtusish, rather fleshy, punctate, revolute. *Flowers* at the forks or bases of branches, sessile and solitary. *Calyx* pentagonal-subtubular, 5-toothed; *petals* white, spatulate, twice as long. *Stamens* 6, exsert. *Style* long, trifid. *Stigmas* clavulate. *Capsule* ovate, 3-valved, about 9-seeded.

S. Patagon., at Kuan-aike near Rio Chico.

2. F. PATAGONICA Speg.

A prostrate shrub, with nude, ascending branches, and decussate, distant branchlets. *Leaves* on the branchlets quadrifariously imbricate, very minute, fleshy, obovate, glabrous. *Flowers* subspicate-capitulate, rather large. *Petals* white, long-exsert.

Patagon., rare near the sea in gravel by Golfo de San Jorge. (Genus *Frankenia* is chiefly Australian; but it is represented in all the Conti-

nents. *F. cymbifolia* Hook., a Patagonian plant, is a misnomer. Its proper name is *Wilsonia humilis* R. Br., of the *Convolvulaceæ*. Index Kewensis, ii, 881. Eng. & Prantl, iv, 3*a*, 15.)

2. NIEDERLEINIA Hier.

Undershrub, with thick-skinned, ericoid leaves, and polygamo-monœcious *flowers*. *Petals* spatulate-cuneate, without an appendage, shorter than the calyx-lobes. *Stamens* in 2 series of 3, or staminodes, *anthers* introrse. Rudimentary *ovary* in the barren flowers. Only 1 seed-bearing placenta.

Only species.

N. MICROPHYLLA Cav. (*N. juniperoides* Hier.)

Low, branching shrub, the branches ascending, and with small, decussate, subprismatic, exstipulate, connate, dorsally channeled *leaves*. *Flowers* solitary, sessile in the dichotomies. *Calyx* 5-lobed. *Petals* 5, hypogynous, lutescent. *Stamens* 6, hypogynous, 1-celled or barren. *Ovary* free, 1-celled, placenta parietal. *Style* filiform, 3-cleft. *Seeds* 4–6, ascending.

Fig. of fruit and seed in Eng. & Prantl, iii, 6, p. 287, M, N. Over all Patagon., by salt lakes north of Rio Colorado; and N. and E. Fuegia (Dusén). Making large clumps by R. de Sta. Cruz.

Family 70. VIOLACEÆ. Violet Family.

Usually herbs, with alternate or basal, stipulate, simple *leaves*, and zygomorphous, 5-merous flowers. The lowest *petal* mostly spurred. *Stamens* 5, hypogynous, with adnate, introrse anthers, conniving over the ovary; the 2 anterior anthers with appendages. *Ovary* 1-celled, with 3 parietal *placentæ*. *Style* simple, club-shaped. *Seeds* many, with large endosperm.

Species 300, widely distributed.

VIOLA Linn.

Sepals subequal, produced somewhat posteriorly. *Anterior petal* with a long spur, for receiving the appendages of the 2 anterior *anthers*. *Capsule* elastically dehiscing into 3 valves.

Many species have also *cleistogamic flowers*, on runners, without petals. Species 150, widespread; though common in New Zealand they are rare in Australia.

KEY TO THE SPECIES.

A. Having stems.
  b. Flowers yellow.
    c. Leaves oblong-obtuse. Stipules incised. Spur short. *fimbriata.*
    c2. Leaves ovate, attenuate-petiolate. Stipules ovate, fimbriate, subacute. Spur short. *maculata.*
    c3. Leaves round-spatulate, entire, glabrous. Stem woody, attenuate-petiolate. Flowers minute. *sempervivum.*
  b2. Flowers blue. Plants prostrate, branching, glabrous. Leaves cuneate-obovate, tridentate, toothed. No spur. *tridentata.*
  b3. Petals variously colored in the flower. Stipules large, pinnatifid. *tricolor.*
A2. Stemless.
  b. Leaves glabrous.
    c. Leaves small, oval, acute. Scape long; flowers yellow. *microphylla.*
    c2. Leaves cordate-rounded, subacute. Stipules large. Flowers blue, with long spur. *huidobrii.*
  b2. Leaves slightly hairy.
    c. Leaves reniform-rotundate. Stipules lanceolate, subentire. Scape long, 1-flowered. Spur short. *magellanica.*
    c2. Leaves ovate-rotundate. Stipules entire. Scape long, with long, narrow, auricled bracts near the flower. *commersonii.*
  b3. Leaves woolly-margined, ovate-spatulate. Scape short. *vulcanica.*

1. VIOLA COMMERSONII DC.

Low. *Leaves* radical, petiolate, ovate-rotundate, obtuse, crenate, sparsely ciliate above, generally reticulated underneath. *Stipules* broad-ovate, membranaceous, concave, entire. *Scape* twice as long as the leaves, arcuate upwards; *bracts* near the flowers, rather large, erect, lanceolate, acute, auricled on both sides at the base. *Flower* pendulous; *petals* obovate-spatulate, glabrous.

Magellan, S. Fuegia to Cape Horn; by Orange Bay on the tops of the mountains; Cordilleras of S. Patagon. (by J. B. Hatcher, February 25, 1897).

2. V. FIMBRIATA Steud.

Root fibrous. *Stem* slender, fruticulose. *Leaves* petiolate, oblong, obtuse, hispidulous above, with fimbriate margin, crenate, the fimbriæ at length vanishing; *petioles* equalling the laminæ. *Stipules* sheathing,

shortly incised. *Flowers* axillary, croceous. *Spur* very short, obtuse. *Capsule* ovate, glabrous, generally punctate. *Seeds* white.

Patagon.; Magellan, at Punta Arenas by Hatcher; N. and E. Fuegia, in sandy places, Dusén. Killik-aike (B. Brown).

3. Viola huidobrii Gay.

Stemless, 8–10 cm. high, glabrous. *Leaves* cordate-rounded, more or less acute, crenate. *Stipules* large, linear-lanceolate, acute, ciliate-lacerate. *Peduncles* longer than the leaves. *Flowers* blue, spur rather long. *Stigma* apically thick, with very short rostrum. (Near *V. maculata*).

(Chili); Patagon. ("Leaves long-petioled" Reiche.)

4. V. maculata Cav. (*V. pyrolæfolia* Poir).

Stem herbaceous. Leaves ovate, subacute, abruptly attenuate to a petiole, sparingly spotted below. *Stipules* ovate, apically fimbriate. *Peduncle* pubescent. *Sepals* lanceolate-acuminate; *petals* yellow; spur short, obtuse. Lateral petals glandular-bearded; the upper one generally glabrous. *Stamens* apically emarginate. Margin of anthers ciliate. *Stigma* apically plane, its rostrum very short. *Capsule* oblong, trigonal.

Distinguished from *V. commersonii* chiefly by the long, acute, dentate stipules. (Speg.)

Magellan, S. Patagon. (Hatcher); Churucca in Desolation I., N. and E. Fuegia (Dusén); Ushuaia; Falklands; Navarino I.

V. maculata megaphylla.

Leaves elliptical or subrotund-ovate. *Root* long terete.

V. maculata pubescens Reich.

S. and W. Patagon. (by Dusén).

5. V. magellanica Forst.

Leaves radical, long-petiolate, reniform-rotundate, crenate, subpilose above. *Stipules* lanceolate, entire or apically lacerose. *Scape* glabrous, solitary, 1-flowered, twice as long as the leaves. *Bracts* lanceolate. *Sepals* oblong-lanceolate, obtuse. *Petals* obovate; the lateral ones bearded; the inferior produced into a short, blunt sac. *Style* arcuate. Stigma naked.

Staaten I.; Falklands; S. Fuegia; S. Patagon.; Punta Arenas; Cabo Negro, and Rio Coy (Hatcher).

6. VIOLA MICROPHYLLA Poir. (non Hook. f.).

Stemless. *Leaves* small, oval, acute, glabrous, save marginal cilia. *Scape* filiform, exceeding the leaves. *Peduncle* glabrous. *Flowers* yellow.

"This is a good species; all glabrous, save some cilia on the leaf-margins; its peduncles free from the rough hairs found in *V. maculata*. The *V. microphylla* of Hook. f. is a quite different plant."

Everywhere in Patagon.; Boucault Bay in Magellan Strait; Fuegia, San Sebastian.

7. V. SEMPERVIVUM Gay.

Stem woody, thickish, ascending. *Leaves* round-spatulate, entire, mucronate, smooth on both surfaces, margin cartilaginous-white or yellow; base attenuate-petiolate; densely cespitose on apex of branches. *Flowers* minute, yellow; peduncles shorter than the leaves. Stigmas 2-lobulate.

(Chili, to 3,000 m. altitude); Patagon., on rocks around Lago Nahuelhuapi.

8. V. TRICOLOR Linn. Pansy.

Annual, with stout, angled and branched stem; and crenate-dentate leaves, having large, lyrate-pinnatifid *stipules*. *Flowers* 16–25 mm. broad, the petals variously colored.

(Eur., cultivated and naturalized in N. Amer.); S. Patagon., on an island in Rio de Sta. Cruz (doubtless introduced).

9. V. TRIDENTATA Menz.

Glabrous; small, prostrate, branching. *Leaves* crowded at ends of the branches, coriaceous, cuneate-obovate, tridentate or trifid above, and 1-toothed on each side at base. *Petiole* short, dilating into sheathing stipules. *Scape* solitary, short, stout, with oblong, obtuse bracts. *Flowers* nodding. *Petals* blue, oblong, obtuse, glabrous, with *no spur*. *Capsule* globose.

Falklands; Staaten I.; Fuegia; W. Magellan at Puerto Angusto (Dusén); Orange Bay, near Cape Horn.

10. V. VULCANICA Gill. & Hook.

Nearly *stemless*. *Leaves* nearly cespitose, ovate-spatulate, woolly margined, serrate, attenuate to a plane *petiole*, smooth above, reticulately

rugose underneath, or with linear yellow-glandular capsules underneath. *Peduncles* shorter than the leaf. *Stigma* oblique, rostriform, membranaceous behind.

(Chili); N. Patagon., rocky hills about Lago Nahuel-huapi.

Family 71. Flacourtiaceæ.

Evergreen trees or shrubs, with *leaves* mostly 2-ranked, alternate, pinnately veined, coriaceous. *Stipules* few, deciduous. Regular, perfect or unisexual *flowers*, 4–5 merous, with *petals* distinct or absent. *Stamens* numerous on a disk; anthers often appendaged opening by lateral slits. *Ovary* mostly free, 1-celled with 3–5 parietal *placentæ*, and many seeds. *Styles* or style-lobes as many as the placentæ. *Fruit* a berry, or capsule, or a drupe. *Seeds* with endosperm.

Species 500, tropical.

AZARA Ruiz. & Pav.

Leaves entire or dentate, bitter. *Flowers* in fascicles or corymbs, regular; *sepals* 4 (5–6); *petals* none. *Style* 3–4-lobed. *Berry* subglobose.

(Fig. in Eng. & Prantl, iii, 6*a*, p. 40, B, C, D.)

Species 22, chiefly Andine; 1 in Fernandez and 1 in Mexico.

A. lanceolata Hook. f.

Stem and branches slender, brown-hairy. *Leaves* small, lanceolate, some ovate, remotely serrate, short-petioled. *Sepals* ovate, reflexed.

W. Patagon., Valdivia; Cape Tres Montes.

Family 72. Passifloraceæ. Passion-flower Family.

Woody tendril-climbers or erect herbs, with petioled, often palmately lobed *leaves*, and regular, perfect, 4–5-merous *flowers*. Throat of the calyx-tube bearing the *petals*, *stamens*, and double or triple fringe-like *crown*. *Ovary* free, 1-celled, with 3–5 parietal *placentæ*. *Styles* 1–5. *Fruit* a capsule or berry, usually many-seeded.

Species 325, in warm climates, most in S. Amer.

PASSIFLORA Linn.

Flowers large, on jointed peduncles. *Ovary* stalked, the filaments united around it, separate above; *anthers* versatile. *Fruit* a berry.

Species 250, chiefly in S. Amer., some in Asia and Austral., 1 in Madagascar.

P. CŒRULEA Linn.

Leaves glabrous, 5-partite, their lobes oblong, entire. *Petioles* 4-glandular at the apex. Stipules falcate. *Bracts* ovate, entire. *Crown* shorter than the calyx.

(Brazil; Peru); N. Patagon., near Carmen de Patagones (escaped?).

Family 73. LOASACEÆ.

Erect or climbing herbs or shrubs, often having stinging *hairs*, with exstipulate *leaves*, and perfect, regular, 4–5-merous *flowers*, having *calyx-tube* adnate to the ovary. *Petals* separate (sometimes 10), inserted on the calyx-throat. *Stamens* mostly numerous, inserted with the petals, often in clusters. *Ovary* 1(2–3)-celled, with 2–3 parietal *placentæ*. *Capsule* crowned by the persisting calyx-limb. *Seeds* mostly numerous; with scanty endosperm.

Species 200, American, with a solitary exception.

KEY TO THE GENERA.

A. Staminodes none, or the outer stamens as filaments or petaloid. Petals mostly flat. Seeds 1–2-seriate on the 3, rarely 5, parietal placentæ. Leaves usually alternate. 1. *Mentzelia*, p. 586.

A2. Fertile and sterile stamens intermingled, the fertile antipetalous, the barren as nectary-scales, antisepalous. Petals cucullate.

b. Capsule opening apically, 3(–5)-lobed, mostly clavate or obconic, rarely twisted. Leaves opposite and alternate. 2. *Loasa*, p. 586.

b2. Capsule opening apically by 3-lobes, cylindrical. Leaves 2–3-pinnatisect. Flowers sessile. (*Grammatocarpus.*) 3. *Scyphanthus*, p. 589.

b3. Capsule opening below, not apically, turbinate, often spirally twisted. Leaves opposite, decussate, with stinging hairs.

c. Stem terete. Flowers usually cymose. Placentæ broad or 3-parted. Capsule thin-walled. 4. *Cajophora*, p. 589.

c2. Stem quadrangular. Flowers solitary on axillary peduncles. Placentæ first fleshy, afterwards dry and enlarged for disseminating the seed. 5. *Blumenbachia*, p. 590.

1. MENTZELIA Linn.

Petals 5, plane, with no intermediate scales. *Stamens* 10–200. *Ovary* 1-celled, *style* filiform, mostly 4-cleft, its lobes twisted. *Leaves* alternate, with hooked, but not stinging *hairs*.

Species 46, chiefly in warm parts of S. Amer.; 1 in Florida.

M. ALBESCENS Gris. (Gill. & Arn. sub *Bartonia*.)

Flowers large, showy, in a leafy panicle. *Staminodes* 5, petaloid, the outer filaments becoming gradually broader, and the outermost sterile. *Stem* with a white, shining epidermis. *Leaves* sinuately toothed. Capsule naked, 3-valved. Seeds broadly margined.

(S. United States; Mexico; Andes and through temp. S. Amer.); N. Patagon.

2. LOASA Juss.

Petals 5 (or 6–7), cucullate or cymbiform, mostly spreading, with as many alternating scales, which bear 2–3 dorsal setæ and are often appendaged. *Staminodes* 10, filiform, in pairs opposite the scales. *Ovary* 1-celled; *style* subulate; *stigma* acute or 3-cleft. *Capsule* 3-valved.

Herbs, often with stinging hairs, and yellow flowers.

KEY TO THE SPECIES.

A. Erect.
- *b*. Leaves pinnatifid, long-petiolate; segments entire or parted, suboval. Flowers solitary, apical. — *patagonica*.
- *b2*. Basal leaves bipinnatifid, long-petiolate, ultimate segments roundish; upper leaves once-pinnatifid. Peduncles axillary, 1-flowered.
  - *c*. Hairs not stinging. — *argentina*.
  - *c2*. Hairs stinging. — *filicifolia*.
- *b3*. Leaves tripinnatipartite. Ultimate segments narrow. Flowers axillary. — *multifida*.
- *b4*. Leaves basi-cordate, divided.
  - *c*. Flowers few, subapical. Leaves 3-partite, and the segments 3-lobed. — *spegazzinii*.
  - *c2*. Flowers axillary. Leaves many-lobed. Petals with red base. — *tricolor*.

A2. Twining. Leaves bipinnatifid; ultimate segments narrow. Flowers on terminal and axillary peduncles. — *volubilis*.

A4. Decumbent-prostrate. Peduncles axillary, 1-flowered.
- *b*. Leaves petiolate, subrotund, 3–5-partite. — *muralis*.
- *b2*. Leaves sessile, cordate-ovate, angular. — *prostrata*.

1. L. ARGENTINA Urb. & Gilg. (*L. pinnatifida* Gill. var *gracilis*.)

Nearly erect. Annual herb, with long, twining stem. *Leaves* opposite, long-petioled; the basal leaves pinnate; their segments pinnatifid, with

roundish, approximate lobes. Upper leaves few, pinnatifid. *Peduncles* axillary, usually 1-flowered. *Calyx-lobes* ovate, much shorter than the petals; half as long as the fruit. *Hairs* rigid, not stinging; some obsoletely glochidiate.

(Chili at 2,700 m. elevation); S. Patagon., by Rio Scheuen.

2. LOASA FILICIFOLIA Pœpp. (*L. pinnatifida* Gill.)

Nearly erect. *Leaves* opposite, long-petioled; the basal with pinnatifid segments and rounded subsegments; the upper pinnatifid.

Characters much as in *L. argentea*, but with stinging *hairs*.

"Chilian Nettle." In Chili at high elevations Head of Rio Chico de la Sta. Cruz, by Hatcher; in flower and fruit, Feb. 9, 1897.

3. L. MULTIFIDA Gay.

Erect. *Stem* rigid, stout, branching. *Leaves* opposite, deeply tripinnipartite; ultimate segments linear, acute; the lowest leaves long-petioled, the upper sessile: the floral leaves alternate. *Calyx-tube* very short, the segments linear-lanceolate, equalling the petals. *Scales* 2-lobed, dorsally 3-appendaged at base, with two 3-jointed filaments inside.

"Amor seco"; Chili; and near Cape San Antonio in N. Patagon.

4. L. MURALIS Gris.

Decumbent, branching, and rough all over, with stinging *hairs*. *Leaves* opposite, petiolate, subrotund in outline, 3–5-partite; their segments pinnatifid-lobate. Outer lobes and teeth ovate, acutish. *Peduncles* axillary, 1-flowered, cernuous, exceeding the leaf. *Calyx-tube* campanulate, the lobes much shorter, lanceolate, tooth-like, 4 times shorter than the short *petals*, which are hooded, dorsally setose. *Scales* hooded, truncate, dorsally naked, ending in a gland and enclosing 2 *staminodes*. Petals enclosing 10-staminal *fascicles*. *Style* simple. *Capsule* globose. *Seeds* oblong.

(Argentina.) N. Patagon., a var.

5. L. PATAGONICA Urb. & Gilg. (*L. pinnatifida* Speg., non Gill.).

Floriferous *stems* numerous, erect, patent, to 12 cm. high, sparsely leaved. *Leaves* lanceolate, or oval-lanceolate, pinnatifid, the pinnæ moderately remote, sessile, entire or 2–4-partite, oval to oval-orbicular.

Flowers solitary, apical; *petals* in the lower part broad-unguiculate. *Scales* dorsally ecarinate, anteriorly deeply excised; the lobes resulting thick-edged, making smaller lobes. *Ovary* inferior.

S. Patagon., by Lago Argentino, at Karr-aike, etc.

6. LOASA PROSTRATA Gill.

Covered by long, stinging hairs. *Stem* prostrate, flexuose. *Leaves* opposite, sessile, cordate-ovate, deeply angular. *Peduncles* axillary, 1-flowered, twice as long as the leaves. *Calyx-lobes* lanceolate, as long as the petals, longer than the fruit. *Capsule* with long, rigid hairs. *Seeds* ovoid, large, smooth.

Chili and N. Patagon. "I am somewhat doubtful as to this being in N. Patagon. The species of *Loasa* are variable, with their limits ill-defined." (J. Ball.)

7. L. SPEGAZZINII. (*L. patagonica* Speg., non U. & G.)

Annual? *Stem* short, thick, attenuate both ways, subsimple, with lax epidermis, leafy below, naked upwards. *Leaves* with long or short petioles, subcordate-ovate, deeply 3-partite, the segments mostly 3-lobed. Lobes of the lower leaves short, broad, obtuse; of the upper leaves narrow, rather long, acute. *Flowers* few at the apex of the stem, nodding, short-pediceled, whitish-yellow. *Scales* of corolla obovate-cochleate, entire, bearing dorsally 3 linear, acute, entire appendages, arising from near the base. *Staminodes* 2, spatulate-linear, laterally compressed, enclosed by the appendages and each with a shorter, subapical appendage.

Patagon., in shrubberies by Rio Sta. Cruz, and near Golfo de San Jorge. 3–30–40 cm. tall.

8. L. TRICOLOR Lam.?

Very *hispid* annual. *Stem* erect. Uppermost *leaves* sessile. Leaves opposite, basicordate, many-lobed; the lobes acute-dentate, the lower lobes often pinnatifid. *Pedicels* axillary. *Calyx-lobes* oblong, acuminate, as long as the *petals*, which are reflexed, yellow, their base with the scales red.

(Chili); N. Patagon., near Lago Nahuel-huapi.

9. L. VOLUBILIS Juss.

Stem twining. *Leaves* alternate or opposite, bipinnatifid; the ultimate lobes linear, obtuse. *Flowers* on terminal and axillary peduncles. *Calyx-*

lobes subdentate, half as long as the petals. *Flowers* small, the scales bilobed, 3-appendaged above externally.

(Chili); S. Patagon., in valley of Rio Gallegos, by O. Nordenskj.; steppes of West Patagon., by Dusén.

3. SCYPHANTHUS Don.

Twining, pubescent herbs, the *hairs* not stinging, with opposite, 2–3-pinnatisect *leaves*; and axillary, sessile, yellow *flowers*, having 5 saccate *petals*, alternating with smaller, cucullate, 3-awned scales; 10 *staminodes*, many *stamens*, a long narrow, stipe-like *ovary*, with few, small *seeds*.

Species 2, Chili, often at great elevations.

S. ELEGANS Don. (*Grammatocarpus volubilis* Presl.).

Leaves petiolate, scabrous, bipinnatifid; the segments linear, obtuse. *Calyx-lobes* ovate-obtuse, two thirds as long as the petals. *Capsule* linear, like a peduncle.

(Chili; called "Mongita," Indian name, "Fues"; cult. in European gardens); N. Patagon.

(Fig. in Eng. & Prantl, iii, 6*a*, p. 117, L. M.)

4. CAJOPHORA Presl.

Low or twining herbs, mostly with stinging *hairs*; and decussate, often crowded *leaves*. *Flowers* yellow, white, or red, rarely axillary. *Petals* mostly valvate, plane or cymbiform. *Nectaries* and *staminodes* of *Loasa*. *Ovary* inferior, with 3–5 parietal *placentæ*. *Capsule* obconic to clavate or globular, straight or twisted.

Species 50, in Andes, Brazil and Argentina.

Fig. in Eng. & Prantl, iii, 6*a*, p. 120.

1. C. CORONATA Hook. & Arn. (sub *Blumenbachia* by H. & S.).

Stem short, prostrate, to 30–60 cm. long. *Leaves* opposite, petiolate, pinnate and the pinnæ bipinnatifid with toothed, ultimate lobes. *Peduncles* axillary, 30 cm. long. *Calyx-lobes* 5, pinnatifid with linear segments exceeding the 3-merous ovary. *Furrows* of the fruit nearly straight.

(Chili, high on the Andes); Patagon.

2. CAJOPHORA PATAGONICA (Speg.).

Stem short, thick, erect, attenuate both ways, leafy below, naked above. *Leaves* long-petioled, subcordate, 3-partite, the segments 3-lobed; lobes of lower leaves short-obtuse, of upper leaves acute. *Flowers* terminal, few, short-pediceled, nodding, white-yellow. *Scales* obovate-cochleate, entire, with 3 dorsal, acute processes. *Staminodes* 2, spatulate-linear.

S. Patagon., by Rio Chico.

3. C. SCANDENS ORIENTALIS (My.). (*Loasa bergi* Hier.)

Leaves subovate, subsessile, pinnatifid, the lobes obtuse, long-linear. *Peduncles* 1-flowered, 8–10 cm. long. *Calyx-tube* hispid, with glochidiate awns. *Petals* yellow, subcucullate. *Stamens* many, in oppositipetalous fascicles. *Staminodes* 10. *Capsule* 10-costate.

N. Patagon., Rio Negro and Chubut.

5. BLUMENBACHIA Schrad.

Annual herbs, with sharply 4-angled, trailing *stem*, and opposite decussate *leaves*, with stinging and also hooked *hairs*. *Flowers* 5-merous, terminal, or solitary on 2-bracted, axillary peduncles; otherwise as in *Cajophora*. *Ovary* globular, becoming a fruit twisted to the left. *Placentæ* at first fleshy, afterwards drying, and enlarging for dissemination of the seeds.

Species 3, Argentina to Brazil.

B. SYLVESTRIS Poepp.

Setose, hispid, climbing. Lower *leaves* petiolate, elliptic-lanceolate, their lobes sinuate; upper leaves sessile, incise-toothed. *Flower* terminal, and solitary in the dichotomies. *Calyx-segments* entire; half as long as the petals.

(Argentina, cordilleras of Antuco); Patagon., Chubut.

B. SYLVESTRIS LEPTOCARPA (Speg.).

Upper leaves mostly ovate, basi-cuneate. The variety with fruits oblanceolate, instead of ovate.

Patagon., Chubut, in shrubberies near streams.

Family 74. CACTACEÆ. Cactus Family.

Fleshy, leafless plants (or with small *leaves*), the *stems* continuous or jointed and bearing spines arising from *cushions;* and *flowers* mostly solitary, large and showy, sessile, regular, and perfect. *Calyx-tube* adnate to the ovary, with many calyx-lobes and petals. *Stamens* numerous, inserted on the tubular axis. *Ovary* 1-celled, with parietal placentæ. *Fruit* a berry. *Seeds* numerous, with copious or scanty endosperm.

Species 1,000, nearly all American, xerophil plants.

KEY TO THE GENERA.

A. Not jointed, but angular or fluted or mamillate. Leaves reduced to scales. Flowers sessile on or near areoles. Perianth funnelform to salver-shaped, with a distinct tube. No barbed spines. Seeds mostly pendulous on long funicles.

b. Stem long, fluted or angled. 1. *Cereus*, p. 591.

b2. Stem short, globular to clavate, or short-columnar.

c. Corolla greatly elongated, salver- or funnelform, with gradually widening tube; arising from the older parts of the ridges. 2. *Echinopsis*, p. 592.

c2. Corolla shorter, salver- or funnelform. Stem conical or clavate. 3. *Echinocactus*, p. 593.

A2. Jointed; joints round or flat and leaf-like. Fugacious, cylindric leaves when young. Barbed spines. Seeds with short funicles, which broaden and surround them. Filaments not as long as the rotate corolla. 4. *Opuntia*, p. 593.

A3. As *Opuntia*, but spines not barbed; seeds lens-shaped. 5. *Maihuenia*, p. 595.

A4. Jointed; joints clavate, rounded apically, attenuate basally. Areoles spirally arranged, approximate, small, with scanty wool. Barbed spines in youth. Flowers small, terminal. Filaments shorter than the perianth. Seeds winged. 6. *Pterocactus*, p. 596.

1. CEREUS Haw.

Stem short or long, costate on the angles, pulvilligerous with lateral flowers. *Calyx-tube* prolonged above the ovary, with tomentose pulvilli. *Petals* many-seriate, exceeding the calyx-lobes, recurved-patent. *Stamens* free almost as long as the calyx-tube. *Ovary* exsert, spiny or scaly.

1. C. CŒRULESCENS Salm.

Erect, attenuate, 8-angled, cœruleous. *Costæ* obtuse, scarcely repand. *Cushions* large, oval, with black tomentum and short, gray wool. Central *spines* 3–4, rigid, black; lateral radiant, slender, white, save at extremities.

Color beautiful dark-green. *Flowers* rare, with white *petals*, externally green; and with red-topped green *scales* imbricating the floral tube.

(Brazil); common by Rio Negro, N. Patagon.

2. CEREUS DUSENI Web.

Small, 20–60 cm. high. *Stem* 6–8-costate, the *cushions* rather remote, with many spines. Long, central *spines* 1–3, erect, uncinate at apex; shorter radiating spines 6–10, acute.

N. Patagon., by Rio Negro; Chubut, rocky precipices near Trelew.

"A most distinct species, near *C. bertinii* Cels." (Speg.)

3. C. LAMPROCHLORUS Lem.

C. LAMPROCHLORUS SALINICOLA Speg.

Trunk cylindrical, 59–150 cm. long, 7–10 cm. thick, apically rounded, erect, not branching, but basally proliferous, very green. *Costæ* 10–12, obtusely rounded. *Areoles* hemispherical-orbicular, white velvety at first; subsequently fuscous, having V-formed sulci above. *Spines* 14–16(–20), ochroleucous, of which 4–5 are slightly stouter. *Flowers* with scent of roses, solitary in the upper lateral areoles, large (24 cm. long), with subglobose *ovary*. *Petals* green-reddish externally, white internally. Stamens many, 2-seriate, some deflexed, others erect and white like the 15-cleft *style*.

N. Patagon., between Rio Negro and Rio Colorado; Bahia Blanca.

4. C. PATAGONICA Web.

Fruit ovate, dry, white to pink, with short, dense, white villosity and fine, blackish *setulæ*, 5–15 mm. long. *Seeds* black, glabrous, areolate.

S. Patagon., near Sta. Cruz.

2. ECHINOPSIS Zucc.

Stem depressed, costate, globose or cylindrical. *Calyx-tube* long, pulvilligerous; the lobes numerous. *Stamens* 2-seriate, the outer adnate to the calyx, the inner free. *Ovary* covered with setæ. *Berry* scaly. *Cotyledons* small, connate.

Species 10.

E. LEUCANTHA Walp. (Pfeiff. sub *Cereus*).

Stem not richly developed, globose or ellipsoid, ashy-green. *Spines* bent, very large, over 2 cm. long. "Honey-yellow." *Flowers* large, white or subrubescent.

(Argentina); N. Patagon., by Rio Negro and Rio Neuquen.

3. ECHINOCACTUS Lk. & Otto.

Stems globose to cylindric, with tubercles in rows, bearing clusters of spines. *Flowers* on the subterminal tubercles. *Calyx-tube* prolonged, scale-crowned, its outer lobes scale-like, and its inner lobes prolonged. *Petals* and *stamens* numerous, perigynous. *Ovary* exserted.

Species 200, from the W. United States to Brazil and Chili.

1. E. ACUATUS Lk. & Otto.

Subglobose, glaucescent, the vertex not distinct, *costæ* 20-acuate, not laterally impressed, the spines 7, spreading recurved, hoary-brown, 8–12 mm. long. *Sulci* broad.

E. acuatus tetracantha Lehm.

N. Patagon., on rocky hills near Rio Negro.

2. E. GIBBOSUS DC.

Ovate or oblong-obtuse; *costæ* vertical, interrupted, tubercled; some of the *tubercles* apically subtomentose, bearing straight, rigid *needle-spines*, others in a different series long-mammose and subcompressed. *Flowers* 2, the largest of the genus, near the depressed apex, with greenish-tube, distant *sepals*, having a white, expanded limb, 4-serial lobes obovate, submucronate.

(Jamaica); N. Patagon., by Rio Negro.

E. GIBBOSUS CEREBRIFORMIS.

A monstrosity; the *ribs* greatly contorted, and the *spines* short.

N. Patagon., by Rio Negro.

E. GIBBOSUS CHUBUTENSIS Speg.

Differs from the species by the *stature* being low, the *color* intensely ashy-glaucous, the *spines* less numerous, and the *flowers* manifestly larger.

Chubut, in plains along Rio Chubut.

4. OPUNTIA Haw. Prickly Pear.

Plants jointed, their *joints* flattened or cylindric, with small, subulate, deciduous *leaves*. *Cushions* spine-bearing. *Calyx-tube* not prolonged.

Petals numerous, slightly united at the base. *Stamens* very numerous, in several series. *Ovary* cylindric, exserted, becoming a pyriform *berry*.

Species 150, chiefly from Mexico to Chili; a few in the United States. Some have been introduced into the Old World, and run wild. (Fig. in Eng. & Prantl, iii, 6a, p. 170, C, G, and 201.) *O. opuntia* (L.) Coult., (*O. vulgaris* Mill.) of American origin is now spreading over the tropical parts of the Old World. Its fleshy fruit is edible.

1. Opuntia darwinii Hensl.

Prostrate, branching shrub, about 5 cm. high, olivaceous. Joints egg-form, scarcely tuberculate. *Spines*, especially when young, entire (not trifid). *Flowers* on top of the uppermost joint, yellow.

Patagon., by Rio Negro; Rio Chubut; Puerto Deseado; in gravelly deserts near Rio Chico.

2. O. patagonica Phil.

Joints subclavate, bright green. *Cushions* covered by a short, white tomentum. *Spines* whitish, 1 compressed, 26 mm. long, and 2 only 1.3 mm. long. *Leaves* 3 mm. long.

Patagon.

3. O. penicilligera Speg.

Platyopuntia. Armed, low, subprostrate.. *Joints* orbicular or broad-obovate, dull green, plane or slightly convex. *Areoles* not umbonate, rather lax, usually with whitish slender torted *spines*, the central one long, and 1 or 2 laterals shorter and weaker; rarely none; when old retrorsely appressed; with large and rather long pencils of rusty glochidia. *Flowers* lemon-colored. *Fruit* clavate, green to rufous.

N. Patagon., between Rio Negro and Rio Colorado; Bahia Blanca and Neuquen.

4. O. platyacantha S. Dick.

Low, branching; the *branches* divaricate, cylindrical, not very tuberculate, shining brown. *Cushions* large, immersed, fulvescent, with setaceous *tomentum*, and with diversely-formed *spines*. Lowest spines 3–4, slender, white appressed. Upper ones 2–3, longer, reed-like, gray.

(Chili); Patagon., Chubut.

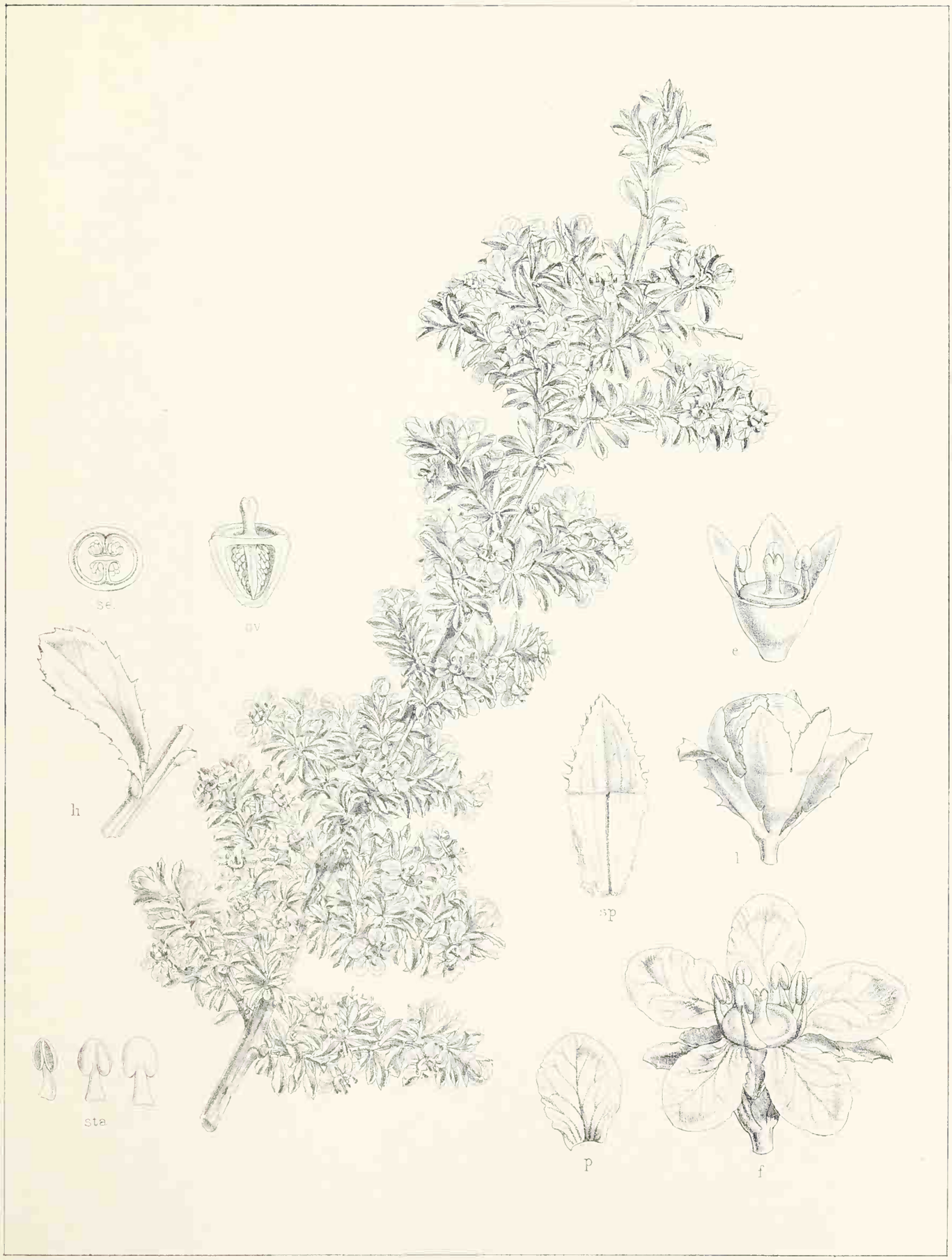
EXPLANATION OF PLATE XV.

PAGE

BERBERIS VIRGATA Ruiz & Pav. 418

The central figure gives the general habit; of natural size.

e, flower, two sepals removed.
f, flower, opened.
l, leafy bracts enclosing the flower.
li, leaf-insertion.
ov, ovary, longitudinal section.
p, petal.
se, seed-vessel, transverse section.
sp, sepal.
sta, stamens.



F.v Iterson. del, J.N Fitch. lith. West, Newman imp.

BERBERIS VIRGATA., *R & P.*

EXPLANATION OF PLATE XVI

PAGE

HAMADRYAS SEMPERVIVOIDES Sprague. 414

The central figure gives the general habit; of natural size.

d, fruit-head, magnified.

f, f, flower, natural size and magnified.

l, leaf; *lc*, sheathing leaves; *ll*, leaf-bud.

ov, ovules.

p, petals.

sp, sepals. The latter figures are all magnified.

PAGE

ARJONA TUBEROSA LANATA, n. var. 342

The two upper figures show the differing habit of two specimens; of natural size. The other figures are magnified.

a, andrecium, on the throat of the calyx-tube.

an, anthers.

b, bract; *ba*, inner bract.

br, bulbous root.

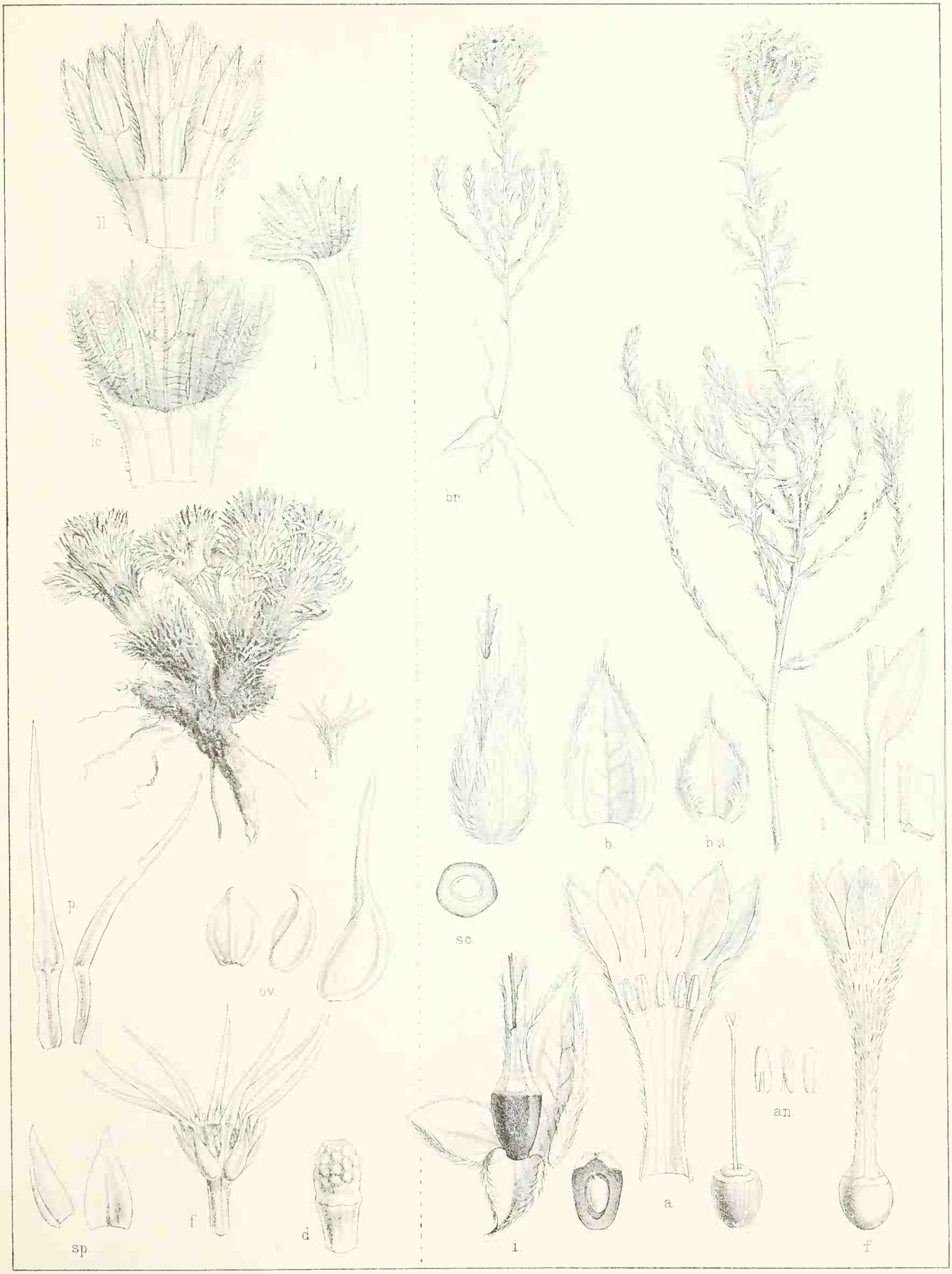
f, flower.

i, insertion of flower amid the bracts, which are moved apart.

l, leaves.

sc, cross-section of seed-vessel.

To right of *a*, the gynecium; to the left of *a*, the ovary in longitudinal section showing the seed. To the left of *b*, a lateral view of the bracted flower.



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HAMADRYAS SEMPERVIVOIDES *(Sprague)* ARJONA TUBEROSA LANATA.

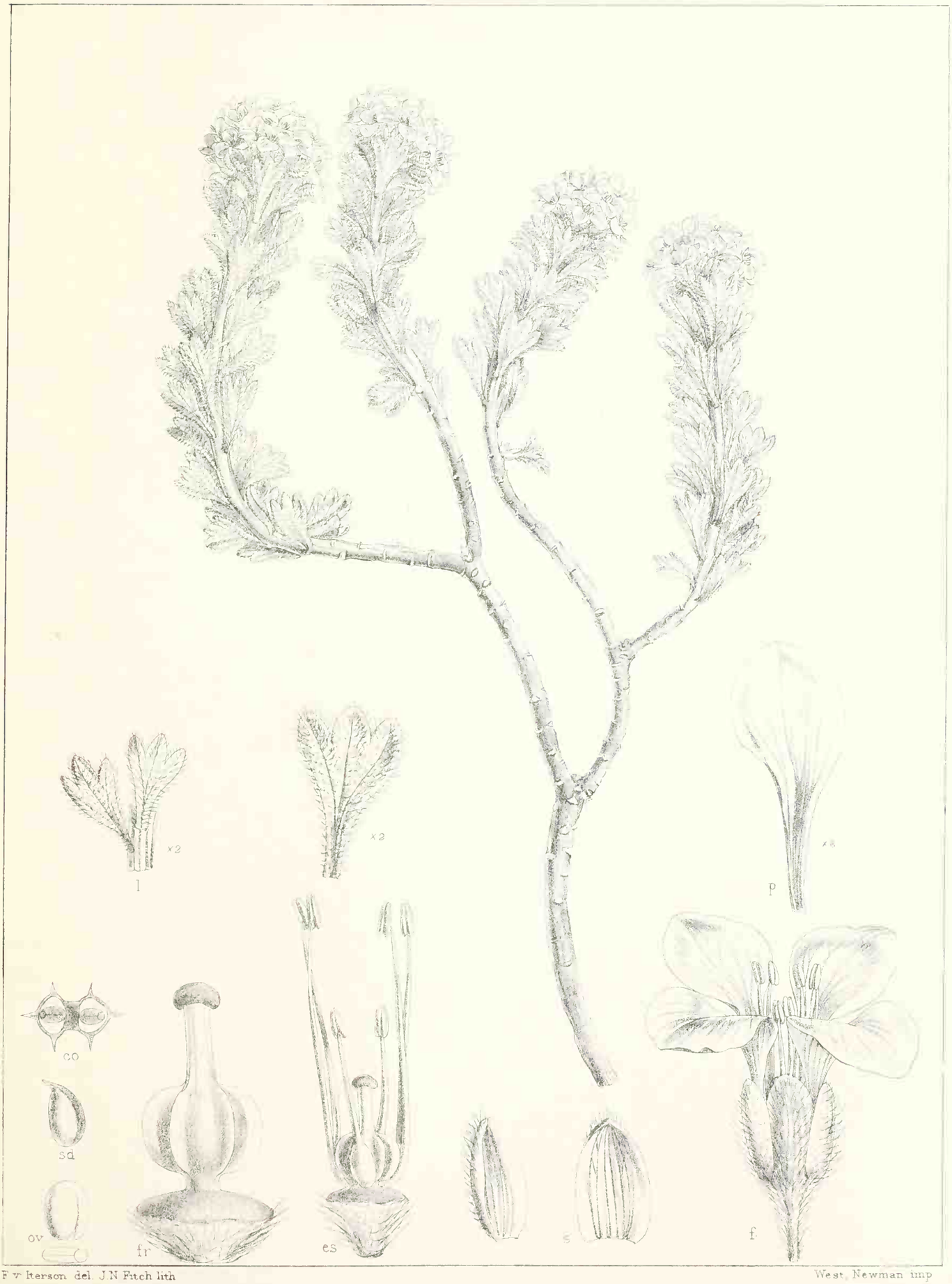
EXPLANATION OF PLATE XVII.

PAGE

HEXAPTERA NORDENSKJÖLDI Dusén 425

The central figure shows the general habit; of natural size.

co, cross-section of ovary.
es, essential organs of the flower.
f, flower, general view.
fr, fruit.
l, leaves.
ov, embryo, side view, and cross-section.
p, petal.
s, sepals, their inner and lateral aspect.
sd, seed. The latter figures are all magnified.



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HEXAPTERA NORDENSKJÖLDII, *Dus*

EXPLANATION OF PLATE XVIII.

PAGE

A. DRABA MAGELLANICA Lamarck 445

Above in the center is shown the general habit; of natural size; and on the left a specimen in fruit.

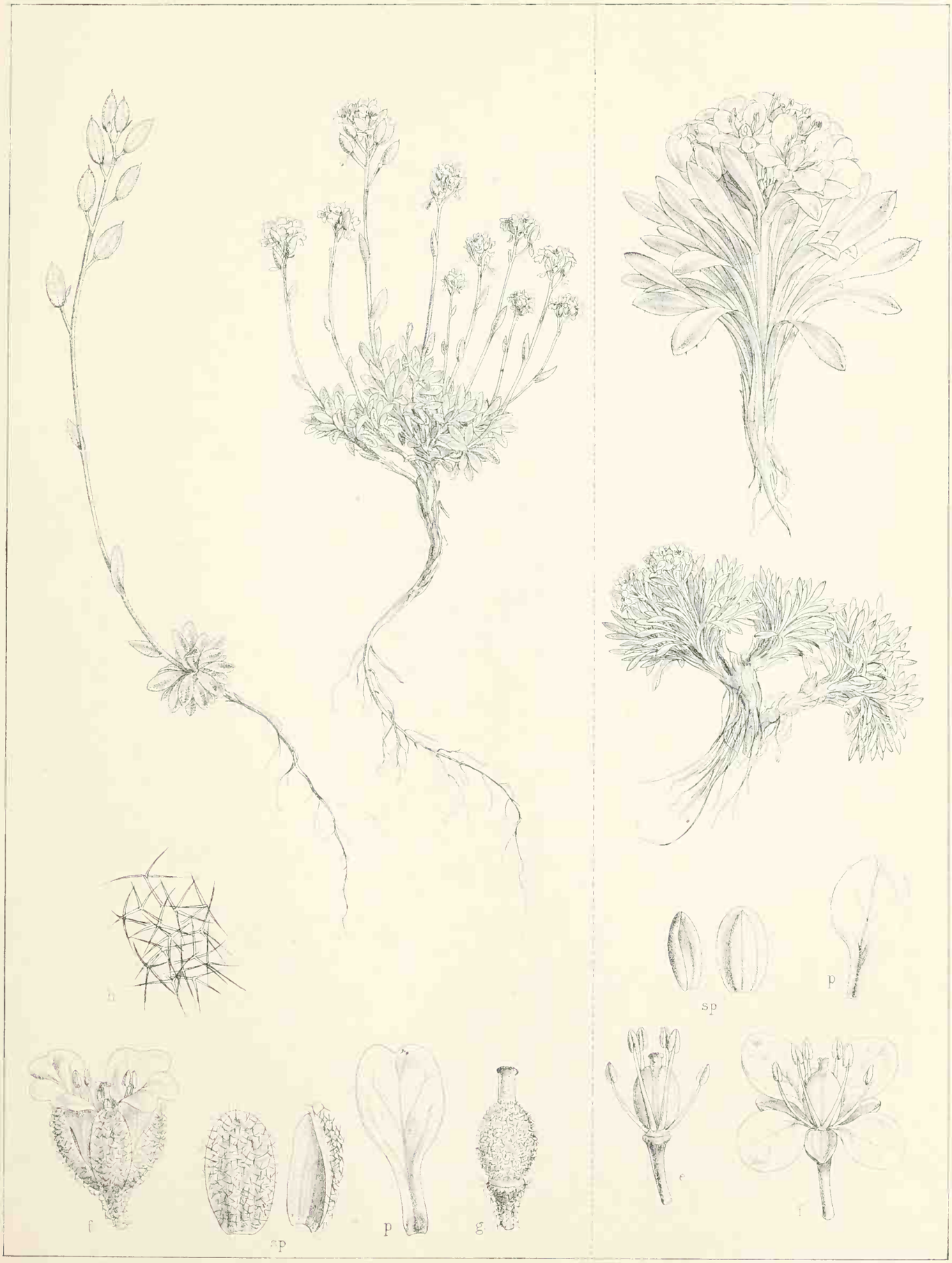
f, flower.
g, gynecium.
h, hairs.
p, petal.
sp, sepals. All these are magnified.

PAGE

B. DRABA HATCHERIANA Gilg, n. sp. 444

The central figure shows the general habit; of natural size; above is a flower-bearing branch, slightly magnified.

e, essential organs.
f, flower.
p, petal.
sp, sepals. All these are magnified.



F v Iteyson del., J N Fitch lith

West, Newman imp

A. DRABA MAGELLANICA *Lam.* B.

EXPLANATION OF PLATE XIX.

PAGE

ACÆNA PINNATIFIDA Ruiz & Pav. 482

The main figure gives the general habit; of natural size.

fl, flower, showing the bracts and spines.

fr, fruit.

gl, glochidiate spine. These figures are magnified.

F v Iterson del. J.N.Fitch lith.

West, Newman imp.

VICIA BIJUGA *(Gill)*

EXPLANATION OF PLATE XX.

PAGE

VICIA BIJUGA Gillies. 522

The main figure gives the general habit; of natural size.

a, ala of flower.

c, carina.

f, young fruit.

l, leaf.

st, stipules.

v, vexillum (standard) of flower. These figures are all magnified.

F. Peterson del. J.N. Fitch lith. West, Newman imp.

ACAENA PINNATIFIDA. *R. & P.*

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